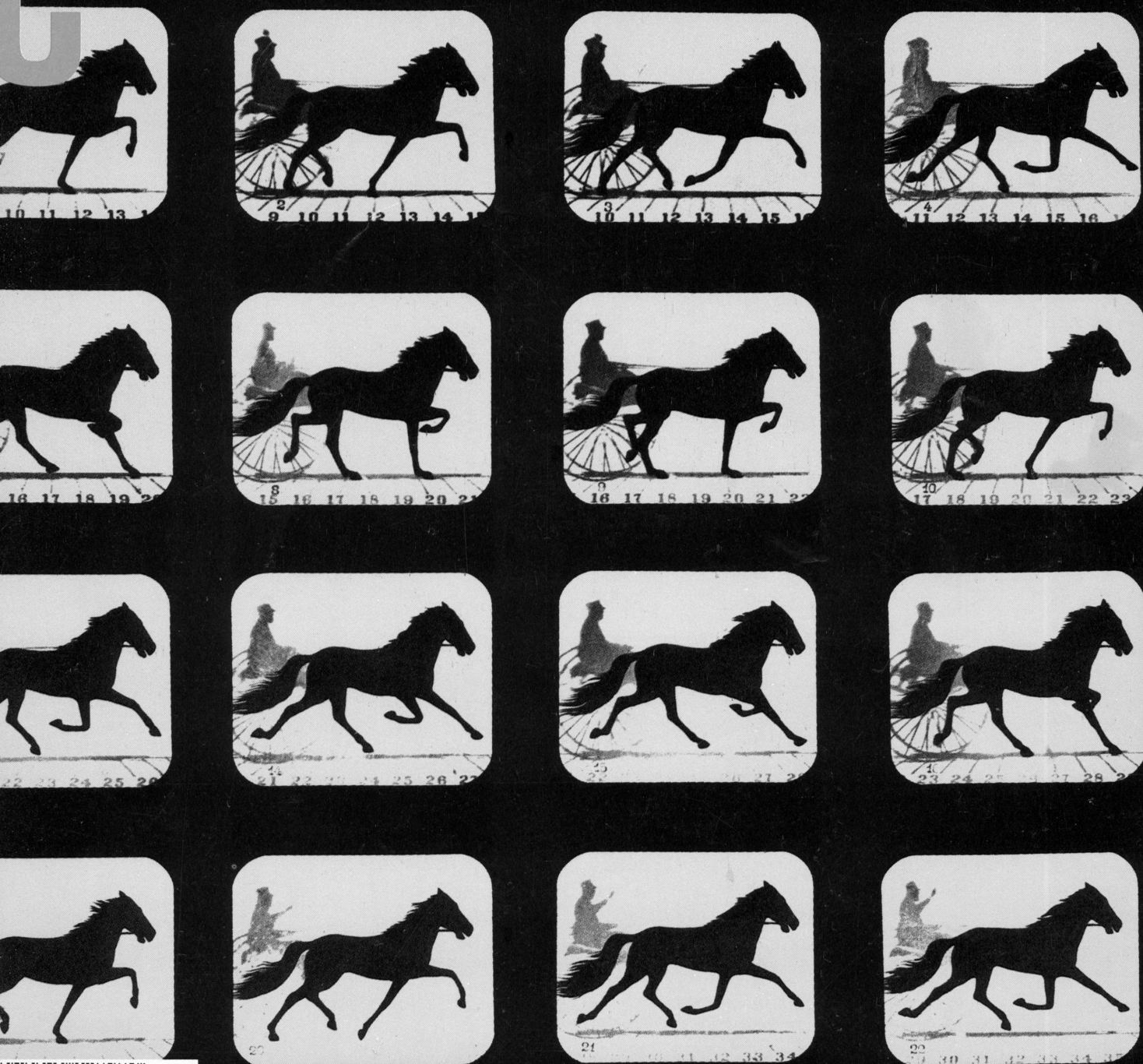


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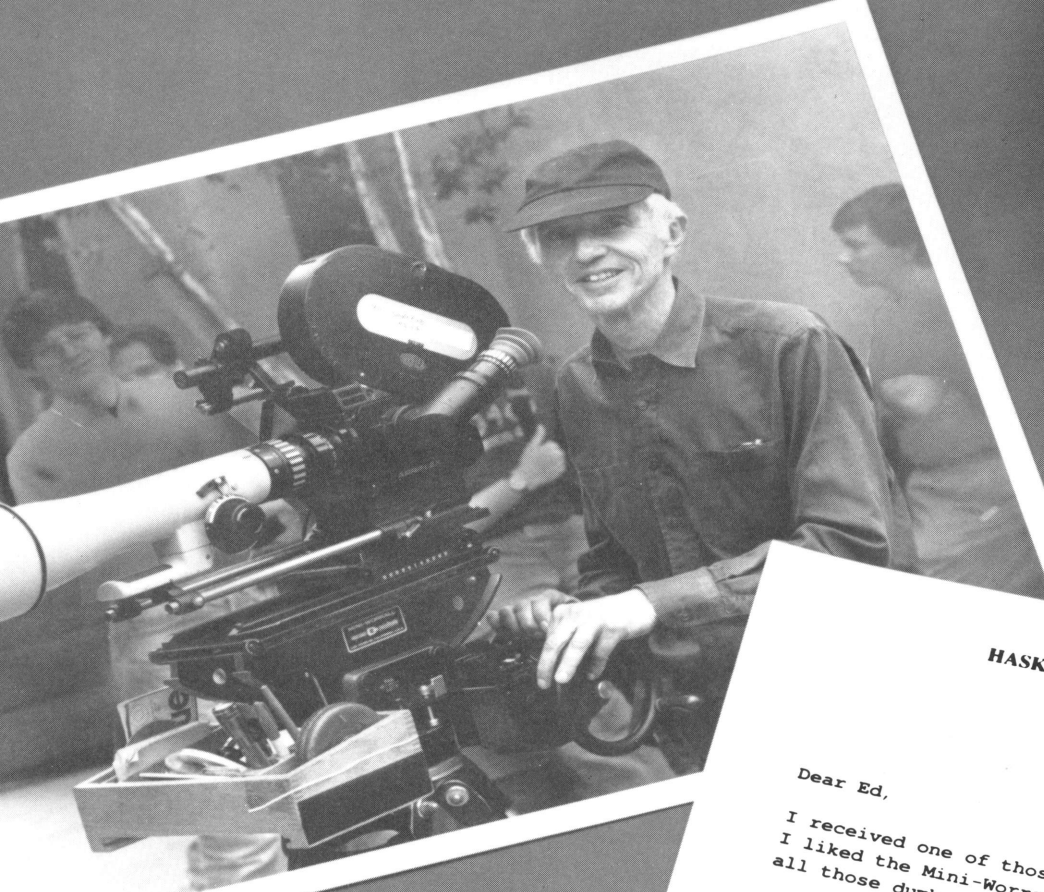
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American Cinematographer



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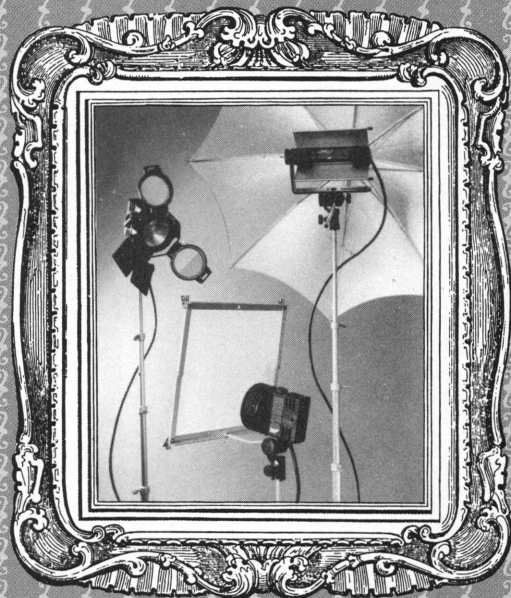
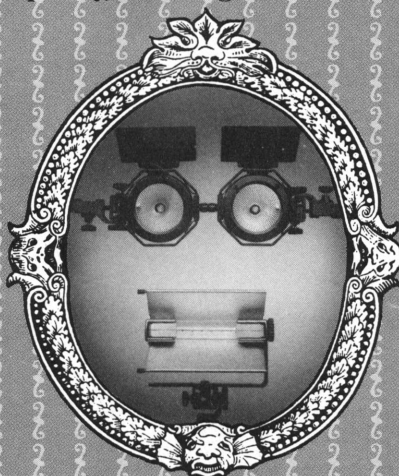
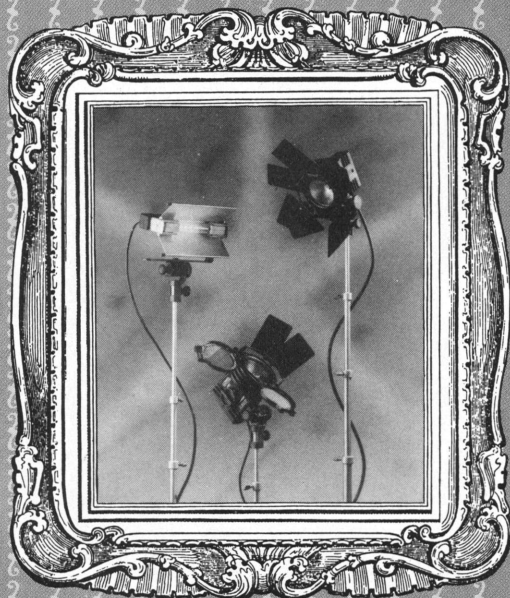
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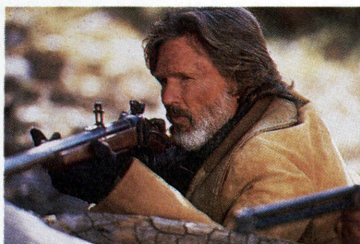
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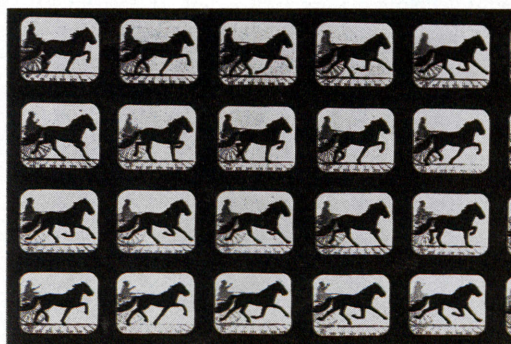
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On Our Cover:

A section of the first photographed motion picture, *Occident Trotting*. (Photos by Eadweard Muybridge).

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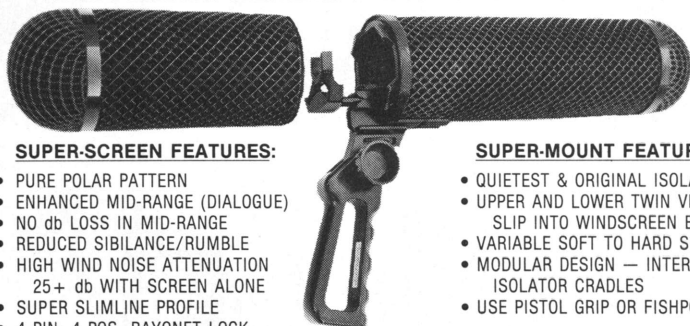
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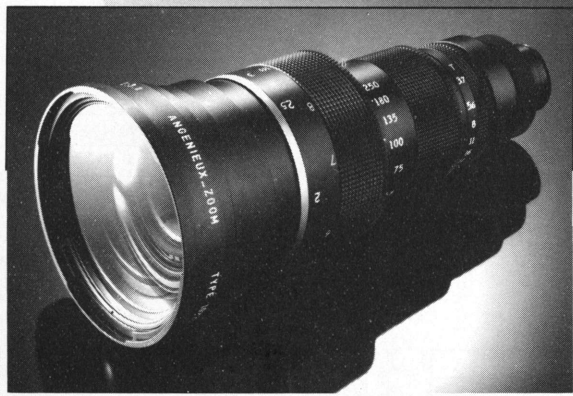
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The 6 x 17 features an advanced mechanical design to minimize "image breathing" as you change focus. The lens front is fixed for easy use of matte boxes, polarizers and effects filters.

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No lens stands alone, so the new 6 x 17HP has been specifically designed to provide ideal color and contrast compatibility with the Angenieux's 25-250HP and today's popular primes.

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The 6 x 17HP provides a unique internal holder for two 40.5mm glass filters. It's internal, not 'behind the lens', so that focus and sharpness are unaffected by a filter change.

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No need to buy a host of new accessories. This new Angenieux lens accommodates today's popular 6.6" x 6.6" matte boxes.

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| Focal length | 17-102 mm |
| Zoom Range | 6X |
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Three TV series

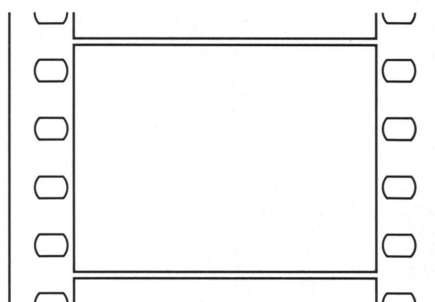
In November, *Thirty Something* went to three-perforation, using our cameras. In January 1988, *Jake and The Fat Man* switched to our three perforation. Series producers are looking at three-perforation because, of course, it uses 25% less film.

TV image area

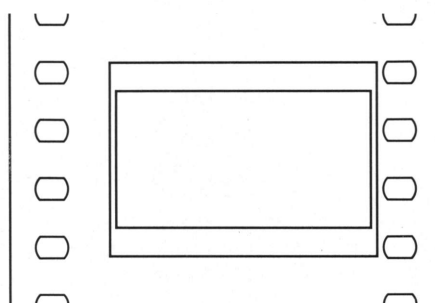
With three-perforation, the image area transferred to tape is 26% smaller. (*That's still 340% the size of standard 16mm.*) The TV transmitted height goes from .594 inch to .511 inch.

Easier to compose for all formats

The advantage here is that the smaller TV area is closer to the Academy 1.85 height (.446 inch), so it's easier to compose well for both—or for the wide-screen TV that's on the horizon.



Above: Full Aperture
Below: Academy Aperture



Inside the Academy
Aperture: old 1.85 format

Super 1.85, too

For TV shows, our three-perforation cameras are normally centered on the Academy Aperture—but you can order them centered on *Full* Aperture. You then get our all-spherical Super 1.85, whose image area is 32% bigger than the Academy 1.85. And the three-perforation TV transmitted area is the *same height* as the Super 1.85.

Full Aperture release prints!

In Sweden, Rune Ericson has shot a feature (the opera *Aida*) in all-spherical, three-perforation, Full Aperture Super 1.85. With theatrical release prints *also* in three-perforation Full Aperture Super 1.85! The six-channel sound is on a separate tape, time-coded. Mr. Ericson says it looks like 70mm.

30 fps quality

And, or course, you can shoot three-perforation at 24 or 30 fps. Imagine the big-screen image quality of a three-perforation Super 1.85 release print at 30 fps! You *still* use less film than four-perforation at 24 fps. And you get perfect transfers to 30 frame videotape. HDTV will originate on *film*.

Short-end takes

Other advantages: At 24 fps, the camera runs more quietly than it does with four-perforation. With 24 fps three-perforation, 150 feet of film isn't a short-end—it's another take. There's less reloading for high-speed shots. Film processing costs less.

Why we can't call it 3-PERF and why you can't, either:

A brief history and some comedy

1954

Linwood Dunn ASC is the founder of Film Effects of Hollywood. In the early Fifties, he modified a Bell & Howell camera to run three-perforation, as part of an optical printer he designed and built. This was for a company that planned to make three-perforation release-prints from four-perforation originals. The idea was to supply free projector adapters to theatres.

1964

Dr. Roderick Ryan, formerly Regional Director of Engineering at Eastman Kodak MP Division, is now a consultant. He has in his files an Arnold & Richter (ARRI) drawing dated November 1964 that shows a proposed three-perforation camera pulldown standard. Three aspect ratios: 1:2, 1:1.66 and 1:2.2.

Patent

In the June 1976 American Cinematographer, there's an interesting article by Director of Photography Miklos Lente on his proposed three-perforation camera system. Mr. Lente had applied for and was granted a U.S. Patent on the system.

1956

In his article, Mr. Lente says: "I got help from many people, especially from Dr. Arnold of Arnold & Richter, Munich, who in 1956 designed a somewhat similar system...I have converted one camera myself for test purposes."

1976

Miklos Lente told us: "When I registered the patent, I tried to get various camera manufacturers interested. Back then, Ed DiGiulio of Cinema Products jokingly used to call me Mr. Three Perf."

1984

In the December 1984 International Photographer, Jim Dickson published an essay titled "3 PERF FILM IN THE FUTURE." Among other things, he proposed a 30 fps three-perforation camera system. It's the same Jim Dickson who shot 60 fps footage for Doug Trumbull's Showscan and who suggested to us the Super 1.85 format that we've put into service.

1986

Film maker Rune Ericson wrote a persuasive article in the July 1986 American Cinematographer, titled "Three-Perf in the Future." Mr. Ericson has made several films in Sweden with three-perforation pull-down, using a Panavision camera. Two of his features have been shown in Sweden with three-perforation release prints.

1987

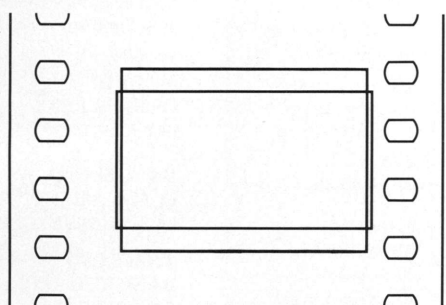
Two more articles: In the October 1987 International Photographer, a very informative paper by Clarke Keller, titled "THREE-PERF TECHNOLOGY" and in the October 2 1987 Backstage, an in-depth news report by Robert Goldrich, titled "Cost-Cutting 3-Perf."

1988

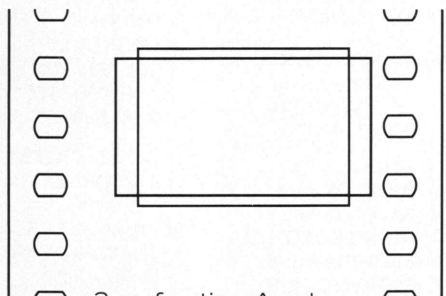
In January 1988, we received a letter from Robert Lyon, Panavision's lawyer. It reads: "Please be advised that Panavision Incorporated, of Tarzana, California, is the owner of the mark 3-PERF for a motion-picture camera employing a new film feed mechanism which reduces film use over that of conventional systems. Panavision was the first to coin this term and to use it as a trademark on modified cameras employing this system and has registered the term 3-PERF as a trademark for cameras employing such system as described above. Panavision is the owner of numerous famous trademarks and vigorously polices and protects its trademarks. We would appreciate if you would refrain from using the phrase 3-PERF in any literature or advertising or in any other written documents or oral communications..."

Okay

Okay, Mr. Lyon! Our lips are sealed.



4 perforation: Academy
1.85 with TV Transmitted
(.594 x .792 inch)



3 perforation: Academy
1.85 with TV Transmitted
(.511 x .680 inch)



3 perforation: Super
1.85 with TV Transmitted
(.511 x .680 inch)

Labs and rawstock makers benefit, too

Will price increases wipe out the saving? Let's hope not. We think *everyone* can benefit from three-perforation – including labs and rawstock manufacturers. Lower costs will surely mean more low-budget production and less production lost to video cameras. And affordable higher quality is bound to reinforce and prolong the use of film for projection in theatres.

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Letters

Theater Critique

With Americans running to video stores in record numbers and the threat of high-definition television just over the horizon, it's hard to believe that theatre owners would create problems which compromise the presentation of movies in their theatres. One problem, projecting films in an aspect ratio which suits the individual theatre's front wall dimensions (akin to chopping-off the tops and bottoms of books to fit shelf spacing), some would argue, isn't as serious as the usual myriad of projection aberrations which constantly confront today's movie-goers. But its subtlety almost makes it worse.

This practice certainly isn't new and unfortunately takes place in many movie theatres throughout the United States. I can't remember the last time I saw a film shot in the 1.85:1 aspect ratio projected at 2.01:1; (although 1.66:1 isn't uncommon for 1.85:1 films nor is 2.01:1 for 2.40:1 films.)

The film I saw, *Made In Heaven*, photographed by Jan Kiesser, was shown at the Edwards Bristol 4 Theatre, part of the Edwards Theatre Circuit, with most screens located in Orange County, California. When I brought this problem to the attention of the circuit's management I was told this procedure (running both formats – 1.85 & 2.40:1 in a common ratio of 2.0:1) was standard practice in their auditoriums which had non-motorized "fixed" masking and that motorized masking is very expensive. Give me a break! Why not forego the "expense" of anamorphic lenses – after all, the vast majority of current releases are photographed "flat" 1.85:1. Who's going to notice if the images are too skinny on those few pictures?

There is a certain amount of monetary commitment involved in operating any business correctly. If Edwards Theatres (and all the others engaged in this tacky practice) find the expense of motorized masking too formidable, at least the correct picture proportions can still be maintained by allowing "white" screen to show at the sides (or top, as the case may be).

In spite of current advances in film technology it seems as though exhibitors single-handedly would like to take theatrical exhibition back to the Dark Ages. (What's this I hear about AMC Theatres wanting to use 16mm prints to save on the expense of shipping?) Today's theater manager is more interested in popcorn sales than what is happening on the screen. And even more to the point, the managers wouldn't know if the picture is being projected upside down and backwards if they should happen to "glance" into the theater auditorium.

If the current rage in theater construction changes so some *real* thought is given to the auditorium rather than all the glitz in the lobby, movie audiences will be in for a truly enjoyable experience. Should we hold our breath? Somehow I don't think so.

– Steve Stuart
Los Angeles

Black and White

I read with fascination Liz Leshin's article "Black & White for *The Contortionist*" on the trials and tribulations of making a student thesis film in black and white 16mm. I am a graduate student here at Ryerson Polytechnical Institute and am just finishing my thesis film, *At The Sound Of The Tone*, which I also chose to shoot in black and white for artistic and not financial reasons. I emphasize this because, as *The Contortionist's* cinematographer pointed out, it really is no longer cheaper to shoot in black and white.

Unlike the makers of *The Contortionist*, however, I had no trouble obtaining 400-foot rolls of Kodak 16mm black and white stock. Apparently my school is Kodak's biggest customer for black and white stock, which is good news for the students here but bad news for other filmmakers fond of the subtle beauty of black and white.

Processing the stock also proved to be no problem. Not only does our school have its own 16mm black and white lab (which now processes the stock of other

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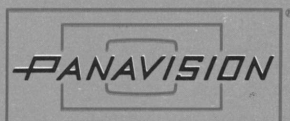
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film schools as far away as British Columbia), but Toronto is graced with two other excellent and "student-friendly" labs (Robert Allen and Film House) offering 16mm black and white processing and printing with very short turnaround times. I wouldn't hesitate to recommend either one of them to someone contemplating shooting on this stock which is rapidly and sadly becoming an endangered species.

—Bill Sweetman
Toronto, Ontario

About Super 8

While I wish to congratulate all who have stuck with Super 8—and thus have made 16mm again the larger format more ideal for certain applications—I do think people should be warned that Super 8 didn't almost completely disappear without some valid justification.

Rent and test Super 8 before you buy and/or trash existing equipment. If new, rent other sizes and try video for comparison. No matter what others may say, Super 8 may or may not be suitable or ideal for you. Rental is the cheapest way to find out.

—D.M. Perrile
St. Clair, Michigan

Arnhem Festival

In the September issue I saw the letter of William E. Hewitt about projecting 30 fps, in which he wrote about the re-issue of *Oklahoma* in TODD-AO 30 fps.

As we are preparing a 70mm festival in Arnhem, Holland, I would like to ask Mr. Hewitt if it is possible to send me some information about this and other re-issues of an original 70mm motion picture: advertisements in papers, critiques, anything that is written about it, maybe a poster of it.

We want to use this for an exposition during the festival. The exposition about 70mm is also the reason that I ask all other readers of this magazine if they have something at home that might be useful: posters, advertisements, souvenir programs of 70mm films, etc.

(Everybody will receive for compensation a little book about Holland!) I hope 70mm will return on the screens of the cinemas!

—Johan C.M. Wolthuis
Katwoudehof 36,
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New Logo

Randy Rudd recently designed and directed computer graphics for a new Paramount Pictures logo that the company is using with its features and promos on television and in theaters.

Rudd and a team of computer animation specialists collaborated with Apogee Productions on the project. The Los Angeles production company built and photographed a model of Paramount's mountain trademark. The shot of the model differed from the image used in the old logo, which was essentially static, by including a pan that begins on a large plain at the mountain's base and ends at its peak.

The computer-generated sequence starts with a squadron of stars that flies into the frame and comes to rest in an arc surrounding the peak. The name "Paramount" appears magically below the stars in a series of pearl-textured letters.

"There was a good deal of technology and trial and error involved in getting that to work," said Rudd. "We had to develop a means of synchronizing the motion of our computer-generated optics with their live action. It was tricky, but the results are beautiful."

Studio Effects produced the logo for Paramount Pictures, Steve Soffer, producer and Jay Jacoby, creative director.

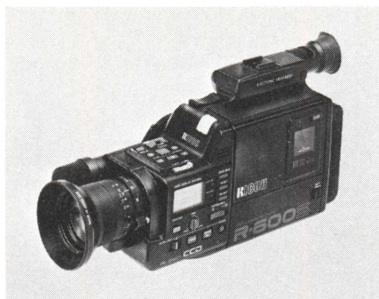
Animators John Howard, Harold Buchman and Bob Hoffman worked with Rudd on the computer graphics.

Randy Rudd directs for Energy Productions, 2690 Beachwood Dr., Los Angeles, CA 90068. (213) 462-3310.

8MM Video Camcorder

The new Ricoh R-600S 8mm video camcorder establishes a new level of performance and quality with its 380,000 pixel CCD (charged coupled device) imaging unit. In addition, the new Ricoh camcorder uses a variable speed digital shutter with adjustable speeds from 1/60 to 1/2000 second.

The CCD, a newly developed 2/3" imaging device, packs in more picture information to produce sharper, more lifelike images.



Other features of the light, compact, cleanly-designed Ricoh R-600S include a fast f/1.6 macro zoom lens with a 12mm to 72mm (6:1) zoom range. The high speed of this lens permits shooting at light levels as low as 5 Lux, permitting video recording under normal room lighting for more natural effects.

The variable speed digital shutter has five speeds, 1/60, 1/100, 1/200, 1/1000 and 1/2000 second. The slow speeds – 1/60 and 1/100 second – permit recording under artificial light with little or no flicker, while the higher speeds provide sharper images on individual frames for more precise motion (e.g. sports) analysis.

The use of a double azimuth recording head provides noise free blurless freeze frame, slow motion, or frame-by-frame advance. And since functions can be operated from the camera itself, there is no need to connect the camera to a video deck to achieve these effects. Full recording capabilities also make this camcorder into a complete recording deck.

For more information: Ricoh Corp., 5 Dedrick Place, West Caldwell, NJ 07006. (201) 882-2000.

Location Cassette Recorder

The WM-D6 crystal sync cassette recorder is a superbly designed machine that has been carefully adapted to include an internal 60 hz. crystal sync generator and to interface with an optional AC resolver. Sync frequencies of 50 hz. and 59.94 hz. (for video) are also available. Other features include an industry-standard female XLR mike connector input and an external sync input via a Tuchel-type socket.

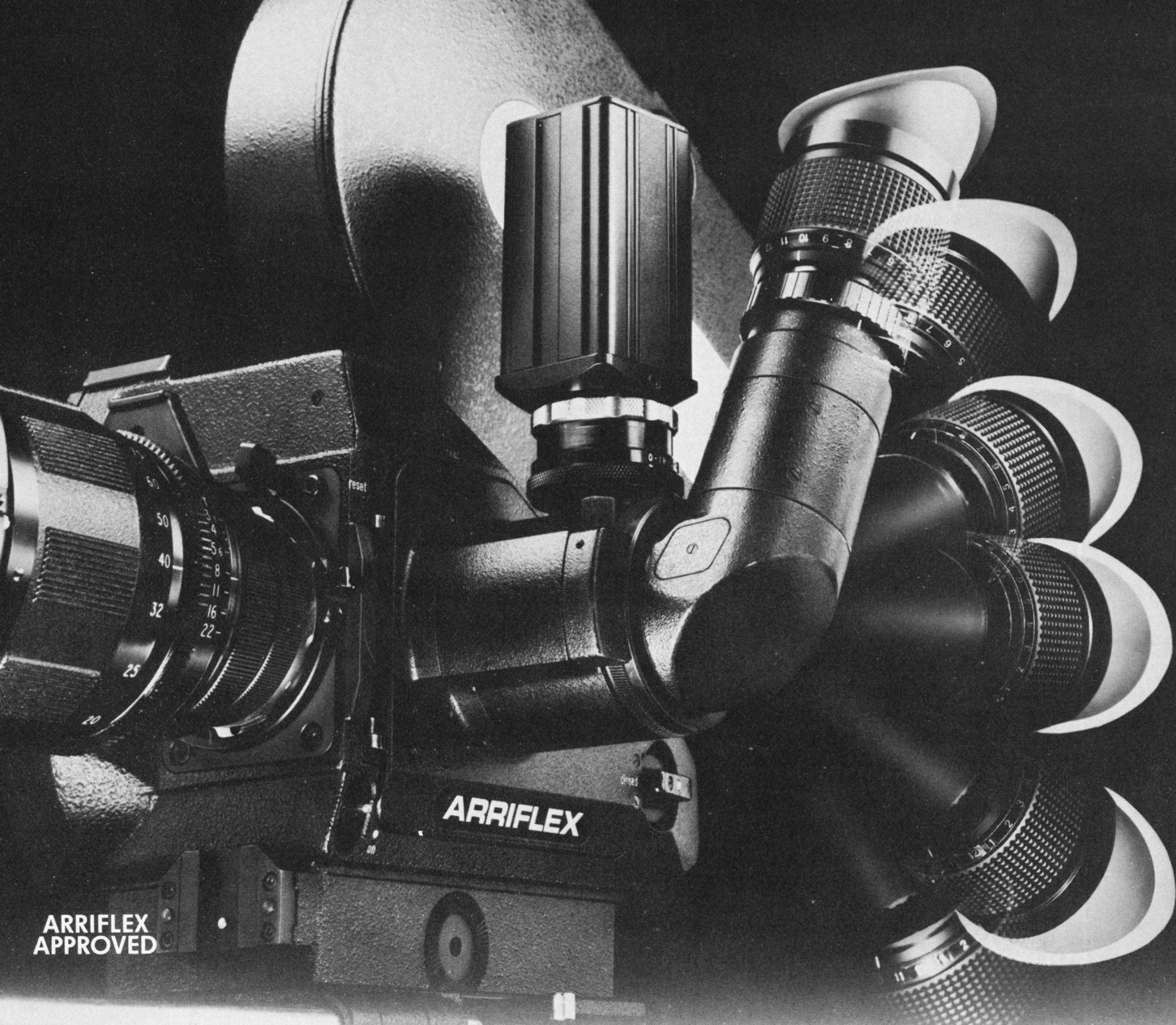
It is a viable alternative to other more expensive mini-sync recorders as it offers truly impressive audio specifications in a very small (7.25" x 1.62" x 3.75") and light 1 lb. 7 oz.) package. By using high grade metal tape cassettes, together with the built-in Dolby® B and C noise reduction circuitry, the WM-D6 can deliver location sound recording rivaling that of more expensive European machines.

For further information, contact: Alan Gordon Enterprises, Inc., 1430 Cahuenga Blvd., Hollywood, CA 90078, phone (213) 466-3561.

Flat Field Diopter

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It's available in two ways: send us your ARRI Orientable Door and we'll return it in only 4 weeks with the system built in with the camera of your choice; or you can buy the whole system, complete with new 35-3 door and video camera.

The CSC Orientable Video Door. Now available for immediate sale or rental at CSC. Distributed worldwide by Arriflex. Also available for sale or rental at Arnold & Richter, Munich, and Arriflex dealers and agents worldwide.

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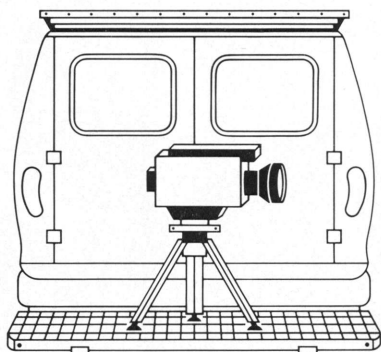
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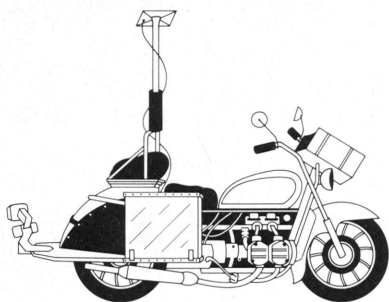
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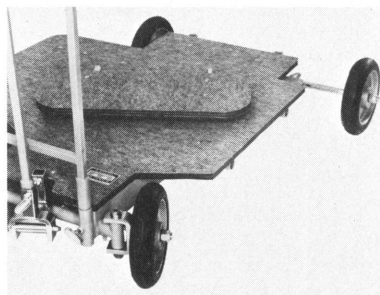
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num frame, the new B.D.B. flat field diopter lens will magnify any image up to 8D with distortion so minimal that it is not visible to the naked eye – the days of curved buildings and boxes are gone.

This ingenious 6" lens comes with an anti-reflective coating in +4, +6 and +8 sizes. It is compatible with the Arriflex 6.6 matte box and is also available in Series 9 for high speed cameras.

For further information contact Birns & Sawyer, 1026 North Highland Avenue, Hollywood. Tel: (213) 466-8211.



Hard Studio Wheels

Matthews Studio Equipment is now offering hard studio wheels as an option on doorway dollies. Hard wheels eliminate bounce on smooth surfaces (stages or concrete) and permit a tighter turning ratio.

For additional information: Matthews, (818) 843-6715.

Denver Company Grows, Moves

Denver-based Film/Video Equipment Service Company, Inc., has recently moved its headquarters to new facilities at 800 South Jason Street, Denver, Colorado 80223. The company has been supplying film and video equipment to the motion picture and television industry for more than 15 years – continually expanding its rental inventory and the range of services offered to production companies shooting on location in the area.

Easily accessible for the entire Denver area, the new, centrally-located 52,000-square-foot facility virtually quadruples F/VESCO's new equipment showroom space, sales inventory storage, and rental equipment check-out area.

In the past two years F/VESCO has more than doubled its already extensive motion picture equipment rental inventory, adding 16mm and 35mm Arriflex camera

packages – including new BL-4 35mm and 16HSR high-speed cameras, video assist units, and a full complement of Cooke and Zeiss lenses, as well as the unique Panther dolly with Super-Jib. New accessories for the Panther dolly allow operators to reach new "lows" with more flexible camera angles.

According to Dean Schneider, president of the company, 35mm film has definitely regained its pre-eminence as the universal quality-medium for commercials and prime-time television production. "People are now more concerned about quality than they used to be," says Schneider. "Talk of HDTV has refocused attention on film as a high-quality, versatile and cost-effective production medium."

According to Schneider, the choice of shooting locations in Colorado easily rivals those in Canada and other Northern areas. "Shooting in the Denver and nearby Colorado Springs areas, producers can easily simulate several different locations: inner-city, downtown metropolitan centers, as well as mountain and country settings."

To receive F/VESCO's latest rental catalog, please contact Jane Swearingen, Film/Video Equipment Service Co., 800 South Jason St., Denver, Colorado 80223. Tel: (303) 778-8616.

New Zoom

Century Precision Optics, distributor for Angenieux cine lenses, announces the introduction of an outstanding new lens for 35mm cinematography. The Angenieux 6X17HP represents the latest in zoom lens design for 35mm cinematography.



Its features include an extended 6X zoom range starting at a very wide 17mm, close focusing capability (29.5"), internal focus design that stabilizes the image size when changing focus, reliable and rugged mechanical design which dramatically reduces the transmission of camera noise through the lens, compatibility with existing 6.6" x 6.6" matte box systems, rear mounted filter slot that accommodates two

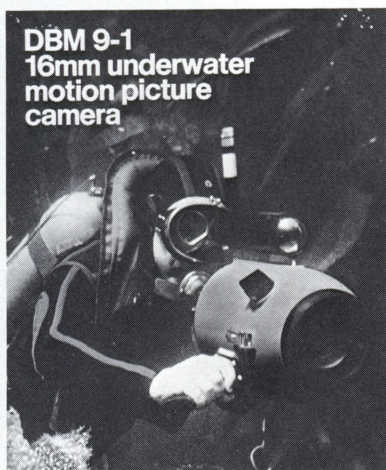
RENTAL NEWS



JIMMY JIB READY IN A JIFFY!

Hollywood (A.G.E.) — It was just announced that the new Jimmy Jib portable camera boom system is available for rental. Designed for use as a heavy-duty tripod or as an Elemack-type dolly, the Jimmy Jib consists of boom arm, remote pan and tilt head, remote focus and zoom controls. Weighing only 46 lbs, the system packs into a car or small truck and can be easily set up by one person in 5 minutes. Now ENG/EPF video camera and location film camera operators can glide their units through a car's interior or make a tracking dolly shot over rough terrain without laying track!

RENTAL RATE: \$150/day \$600/week.



DIVING DEEP WITH DBM 9-1

The remarkable Milliken DBM 9-1 16mm underwater camera now joins the rental fleet at A.G.E. The camera features a Leitz "water contact" lens, 400 foot film capacity and pre-set speed options of 16, 24, 32, 48 fps. With an operational depth of 300 feet, the DBM 9-1 is quickly re-loaded on location because of the pre-threaded magazines which contain most of the film movement parts. The highlight of the camera's features is the fixed-pin registration movement which makes shooting with the DBM 9-1 ideal for video transfer or blowing up to 35mm.

RENTAL RATE: \$175/day \$700/week.

RENTAL NEWS HOLLYWOOD EDITION FOR FILM & VIDEO PROFESSIONALS MARCH 1988

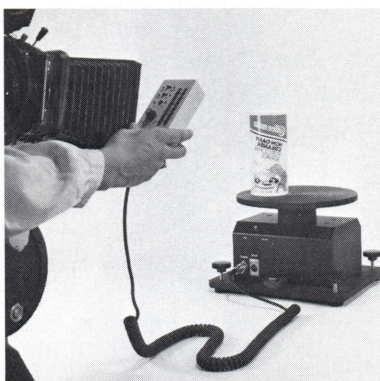
ALAN GORDON ENTERPRISES

SONIC BABY BOOM MAKES 2!

By popular demand, the original Sonic 312 telescopic 12-foot mic boom is now available in a shorter version, the Sonic 307 model. Designed for the ENG user, the 3-section, 7-foot Sonic 307 offers the same mechanical and electrical innovations as the Sonic 312:

- Lightweight, black anodized aluminum
- Universal Microphone mounting stud and cable strain relief
- Foam wrapped core surrounds Canare "Star Quad" cable
- Neutrik Black Chrome XLR connectors with gold plated contacts
- Silent twist lock collars

RENTAL RATE: \$5/day \$20/week



PRODUCERS TURNING TO REVPOD

Hollywood (A.G.E.) — The revolutionary new product turntable, REVPOD, is fast becoming a favorite of tabletop producers and cameramen according to Rental Manager, Ted Landon. Special features like the 9 3/4" diameter turntable, rotational speeds programmable from 0-8 rpm with pre-determined stops, and built-in levels provide superior creative options. "It's no lightweight either," says Landon, "the compact but tough REVPOD handles products up to 50 lbs in weight."

RENTAL RATE: \$50/day \$200/week.



FASTEST MEN ALIVE

That's what A.G.E. has dubbed the Assistants and Operators who have been certified to crew the IMAGE 300 35mm high-speed motion picture camera. Aptly-named, these film and commercial makers operate a camera that shoots film up to an amazing 300 pin-registered fps! Compelling slow-motion effects are produced when the film is viewed at normal speed.

"One of the highlights of the new Pizza Hut commercial is the rotary cutter slicing through crust and pie-filling as it rolls across the pizza in slow-motion," says Jimmy Williams, camera assistant on the Gluck Films shoot. "It helps sell the light, flaky crust of their pies." The IMAGE 300 is exclusively manufactured by Alan Gordon Enterprises.

RENTAL RATES FOR L.A., NY, London and Munich on request.

BONUS SECTION . . .

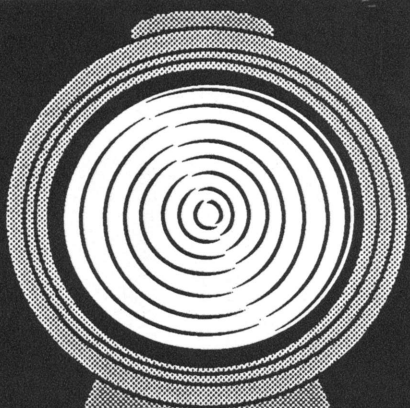
Any major motion picture rental house can supply you with standard film and video production items such as Arris, Mitchells, Nagras and Angenieux etc. But A.G.E. also offers the bonus of specialized equipment rarely found at other rental houses. Examples:

| | |
|---|-----------|
| Hycam 16mm High Speed Camera | \$100/day |
| Mini-Cam 16 Camera Kit | \$ 35/day |
| Video Assists for Arri 35BL II & Arri 35-3 | \$150/day |
| Dynalens Image Motion Stabilizer | \$200/day |
| Super Grip II Camera Mount | \$ 20/day |
| Javelin Night Viewing Device | \$ 75/day |
| Photosonics Action Master High Speed Camera | \$110/day |
| Camraprompter for Film/Video | \$ 45/day |
| Matthews Briefcase Dolly | \$ 30/day |

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For more information: Century Precision Optics, 10713 Burbank Blvd., N. Hollywood, CA 91601. (818) 766-3715.

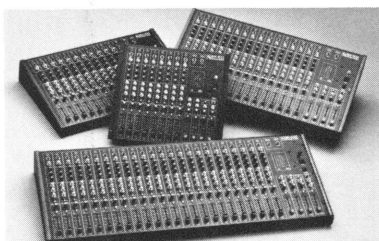
HDTV 2-D Animation System

Symbolics Graphics Division has announced the first High Definition TV (HDTV) computer graphics system that offers full 2-D and 3-D animation and paint capabilities in HDTV format. This system is the first to support 3-D animation for output in HDTV format.

Symbolics S-Product software, which has the capability to run in HDTV format, is now supported by new color controller and genlock cards that enable HDTV output to monitors and to HDTV video tape recorders.

The Symbolics HDTV format and bandwidth are output compatible with the NHK/SONY HDTV standard of 1125 scan lines with 5:3 aspect ratio. The Symbolics system also runs at NTSC, PAL, high resolution RGB, and film resolutions. With a genlock capability to NTSC systems, frame grabbing is possible at NTSC resolution (640 x 483). The system can be used to create either 3-D images or original Paint images at HDTV resolution and can use NTSC resolution images as a part of the HDTV image. This function is useful in capturing textures for rendering. The system incorporates a full 32 bit frame buffer with alpha channel for mattes.

For further information contact Symbolics, Inc., Graphics Division, 1401 Westwood Boulevard, Los Angeles, CA 90024. Telephone is (213) 478-0681.



Stereo Mixing Consoles

Electro-Voice introduced a new series of BK-32 stereo mixing consoles January 1. The series expands on the successful

introduction of the BK-1632, 16-channel stereo mixing console, offering various channel configurations: 24 channel, 16 channel, 12 channel, and a rack-mountable 8 channel.

The BK-32 series provides features that sound engineers look for in a mixing console including: subgroup capability, individual channel effects loops, multiple sends, phantom power and pre-fade listen.

For more information: Electro-Voice, 600 Cecil Street, Buchanan, MI 49107, (616) 695-6831

Portable Lighting

Arriflex unveiled the newest addition to its Arrilite portable lighting line – the Arrilite 600 – last fall. The 600 watt fixture is the smallest thermoplastic, injection-molded fiberglass light now available. It features all the "cool touch" advantages of the 650W, 1000W and 2000W Arrilites.



Only 9.5 inches high and weighing in at 1.65 pounds, the Arrilite 600 is ideal as an on-camera light and perfect for tight field production situations. For battery operation, the Arrilite 600 takes the 250 W, 30v DC DYG bulb, and for normal 110v AC use, the Arrilite 600 uses the 600W DYS bulb. Vertical mounting of the lamp increases lamp life and provides a 4:1 flood/spot ratio.

For more information, Arriflex Corp., 500 Route 303, Blauvelt, NY 10913; (914) 353-1400.

Pattern Tips

A new, comprehensive pattern catalog, "Shadow Play 3," has just been published by The Great American Market. It illustrates all standard and continental size patterns, including some not previously available. Also in "Shadow Play 3" are

DU ART DELIVERS

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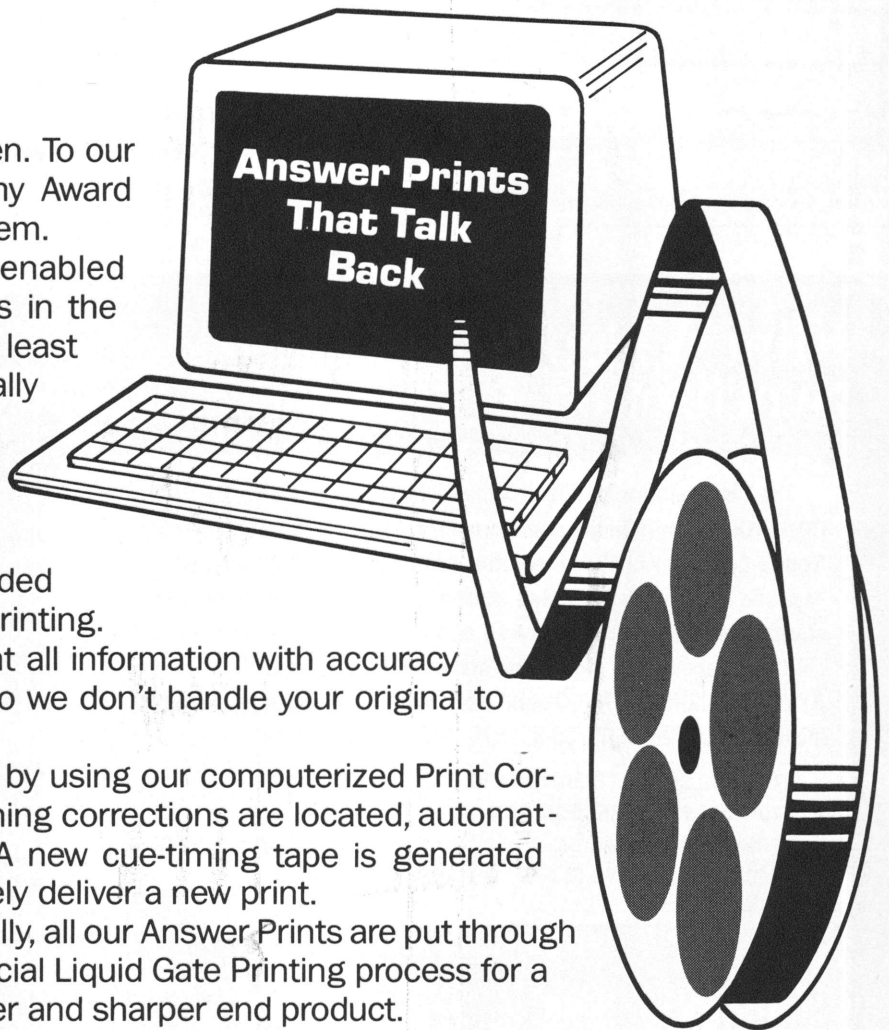
Our computers read and print all information with accuracy safeguards to prevent errors. So we don't handle your original to recheck or reprint.

Timing corrections are made by using our computerized Print Corrector. Any scenes requiring timing corrections are located, automatically calculated and entered. A new cue-timing tape is generated to immediately deliver a new print.

And, finally, all our Answer Prints are put through a special Liquid Gate Printing process for a cleaner and sharper end product.

Because we understand your problems and care about your success, we deliver the best, every day. Because we listen when our Answer Prints talk.

Du Art. We deliver the best Answer Prints.

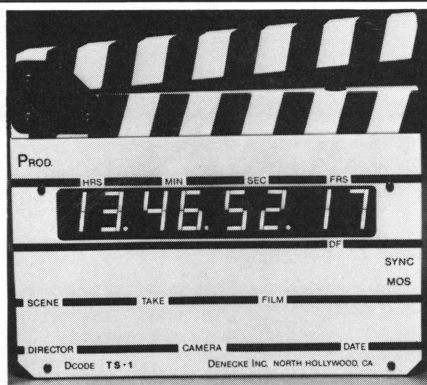


We also deliver valuable technical advice in free brochures prepared for our customers and friends. For your free copy please call the Sales Department at 212-757-4580.



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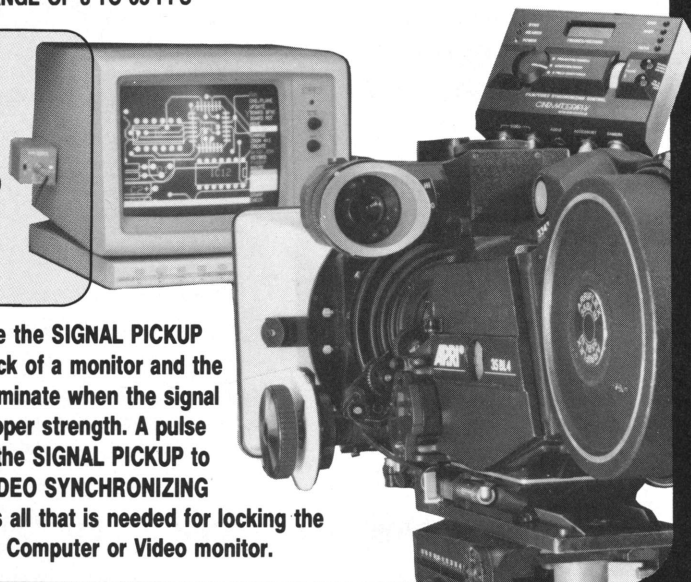
Film/Video Synchronizing Control

The Cinematography Electronics FILM VIDEO SYNCHRONIZING CONTROL is the ultimate camera control for removing the scan bar from a Computer or Video monitor; eliminating the breathing of the exposed image on a projected screen, or locking multiple camera shutters together. It has a stylish package with all function knobs and controls placed in an ergonomic manner. The FILM VIDEO SYNCHRONIZING CONTROL will work with many types of cameras including: Arriflex 35BL, 35-3, 16SR, 16SR HS, Panavision, and Aaton.

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Signal Pickup

Simply place the SIGNAL PICKUP near the back of a monitor and the LED will illuminate when the signal is at the proper strength. A pulse chain from the SIGNAL PICKUP to the FILM VIDEO SYNCHRONIZING CONTROL is all that is needed for locking the camera to a Computer or Video monitor.



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updated numerical and alphabetical indices and specifications on the various pattern sizes manufactured by The Great American Market.

"Pattern Tips," information on how patterns work and how to make them last longer has been printed recently by The Great American Market. It diagrams the optical configuration which causes patterns to image and discusses the usable life of the product — what to expect from various patterns and how to make them better.

For more information: The Great American Market, 826 N. Cole Ave., Hollywood CA 90038; (213) 461-0200.

Hand-Held SunGun

LTM has developed a reliable answer to a battery-powered HMI SunGun. This unit uses a 270 watt HMI single-ended lamp, which has a small arc-gap, good color temperature, and is efficient for exterior shooting.



The lamp is mounted in the same reflector as in the LTM Ambiaric 200W fixture, which is widely used by professionals, and in particular, news crews. Particular attention has been given to the inverter/ballast system for maximum reliability in feature location and electronic remote shoot situations.

For more information: LTM Corp., 1160 N. Las Palmas Ave., Hollywood, CA 90038. (213) 460-6166.

Projection System

Pioneer Technology Corporation announces a new projection system, the Model PTC MFAP, a multiformat projector for 16mm, 35mm and 70mm (Type I and II) roll film.

The projector accommodates film reels up to 1000-ft. in length and

OpTex complete 1000 Lens Conversions



IN 1975 OpTex opened up new creative possibilities for cinematographers with our matched series of telephoto lenses: the world-renowned OpTex Canon conversions. OpTex have now completed over 1000 conversions.

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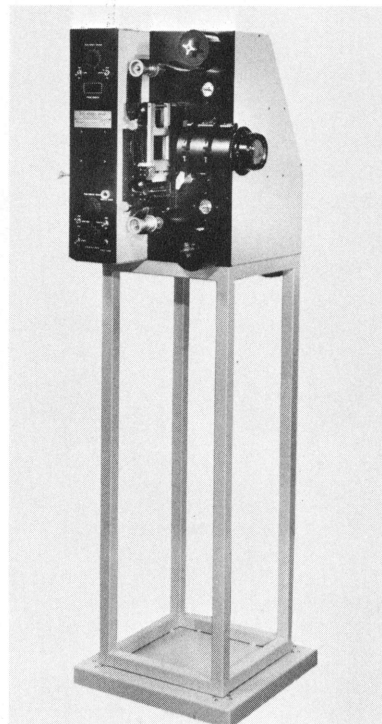
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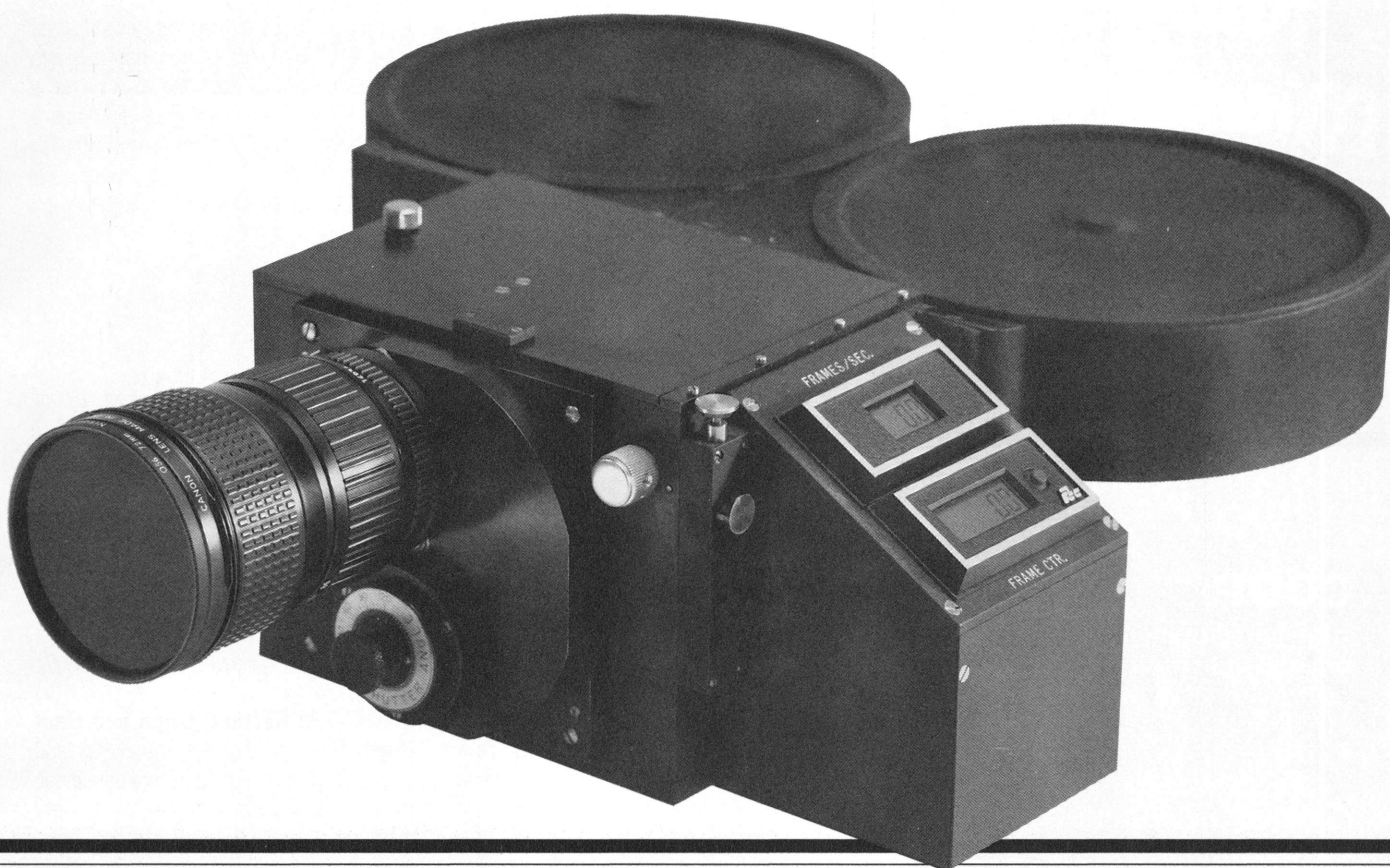
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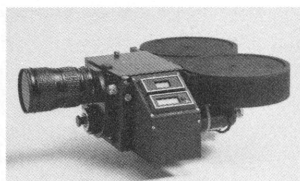
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The Bookshelf

by George L. George

Mickey, Donald, Pinocchio, Bambi, Cinderella are among the popular favorites found in John Grant's comprehensive **Encyclopedia of Walt Disney's Animated Characters**. This large format, extensively illustrated volume describes affectionately some 900 characters whose personalities and exploits enliven Disney's cartoons and features. (Harper & Row, NYC, \$35).

The shifting currents in American film from the turbulent 70s to the conservative 80s are knowledgeably interpreted in Robin Wood's **Hollywood From Vietnam to Reagan**. In well-documented examples, Wood identifies the directors (De Palma, Friedkin, Lucas, Cimino) and the films (*Heaven's Gate*, *Cruising*, *Blade Runner*) that were among the trend-setters in this evolution. (Columbia U. Press, NYC, \$12.50).

Movie costumes from the Los Angeles County Museum of Art collection are attractively displayed in **Hollywood and History: Costume Design in Film**, compiled by Edward Meader. Its nearly 300 illustrations of apparel from *Cleopatra* to *Star Wars* provide a remarkable record of imaginative fashion artistry. (Thames & Hudson, NYC, \$35).

A perceptive study in contrasting personalities, **Hitchcock and Selznick** by Leonard J. Leff traces the confrontational course of their collaboration on *Rebecca*, *Spellbound*, *Notorious* and *The Paradine Case*. Differences in temperament and esthetic outlook caused repeated clashes that, paradoxically, often benefited the final product. (Weidenfeld & Nicolson, NYC, \$22.50).

Joseph Zsuffa's outstanding biography, **Bela Balazs**, chronicles the embattled life of the Hungarian-born philosopher, critic, screenwriter and director. His lasting contribution, a seminal theory of film esthetics formulated in the early 1920s and embraced by the leading European filmmakers of the day, was first to view cinema as an autonomous art form with its

own special means of expression. (U. of California Press, Berkeley, \$50).

The cameraman's enduring stamp on a film is emphasized by cinematographer Tom McDonough in **Light Years**. His spirited and highly personal memoir narrates his adventures in filming and discusses the work of such colleagues as Gordon Willis, ASC, Nestor Almendros, ASC, and James Wong Howe, ASC. (Grove, NYC, \$17.95).

In **Gaffers, Grips and Best Boys**, Eric Taub surveys the duties and responsibilities of motion picture personnel. From entertainment attorney to nursery man, each function is clearly and informatively defined. Name contributors include director John Carpenter, cinematographer Haskell Wexler, ASC, actor John Lithgow and screenwriter Walter Newman, and on to stuntmen, electricians, stagehands and so on. Assistant directors are inexplicably dismissed in two brief mentions. (St. Martin's, NYC, \$10.95).

Prof. Ira Konigsberg compiles in **The Complete Film Dictionary** a comprehensive and instructive lexicon of current terms and phrases. It covers, in over 3,500 entries, the art, technology and industry of the film medium with definitions both succinct and thorough, supplemented by drawings and photographs. Up-to-date, well organized and literate, this is a particularly valuable reference work. (NAL, NYC, \$24.95).

An engrossing collection of essays, **Currents in Japanese Cinema** by movie critic Tadao Sato, brings revealing insights into the history, genres and standards of his country's films, and the work of its leading directors and performers. Donald Richie's classic pictorial history, **The Japanese Movie**, now in an updated edition, surveys Japan's cinema in an authoritative and thoughtful commentary and a profusion of stills from representative films. (Kodansha, NYC, \$13.95 and \$27.95).

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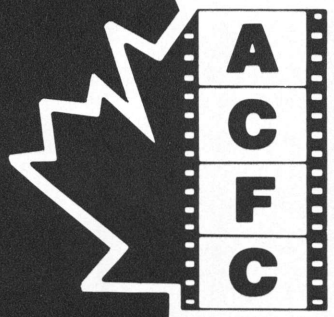
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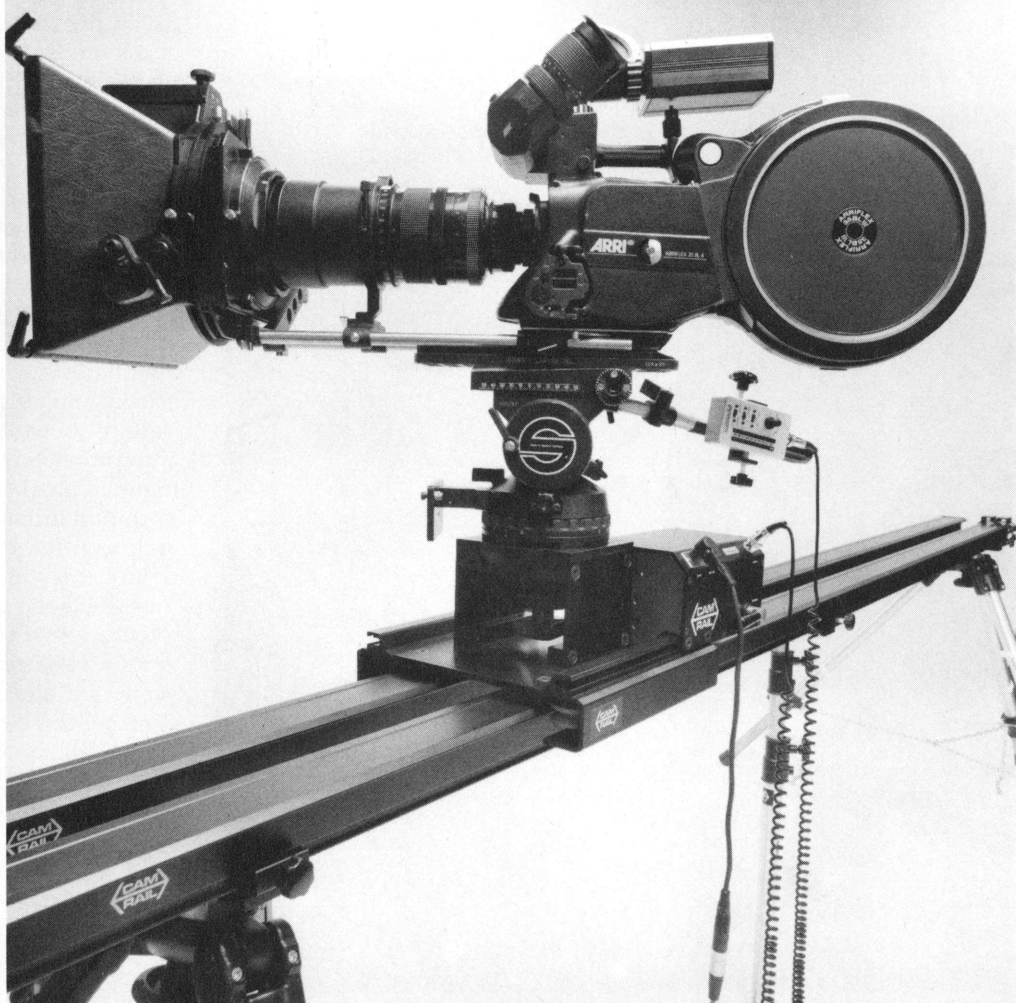
Critical analysis of film structure is examined in two significant volumes. Joyce E. Jesionowski's study of D.W. Griffith's Biograph films, **Thinking in Pictures**, reveals the innovative method Griffith used to blend the various elements – plot, performance, action – into a cohesive entity. In **The Prophetic Soul**, Leon Stover evaluates the structural design of H.G. Wells's 1936 film, *Things to Come*, based on its treatment and shooting script, both included in the book. (*U. of California Press, Berkeley, \$27.50; McFarland, Box 611, Jefferson, NC, \$39.95*).

Two new studies consider cinema in terms that probe such primary aspects as its essential nature and its methods of communicating ideas. In **Philosophy of the Film**, Ian Jarvis examines the link between the movies' imitation of life and the viewers' willingness to accept it as reality. In **Technologies of Gender**, Teresa de Lauretis discusses the effect of feminist theories on women's cinema and the dichotomy between esthetics and social activism. (*RKP/Methuen, NYC, \$33; Indiana U. Press, Bloomington, \$20/7.95*).

Comedy teams of the recent past are reappraised in **The Marx Brothers: A Bio-Bibliography** by Wes D. Gehrig and **Laurel and Hardy: The Magic Behind the Movies** by Randy Skretvedt. Well-researched and informative, these volumes bring new light on the comedians' contribution to screen art. (*Greenwood, Westport, CT, \$38; Moonstone Press, Beverly Hills, CA, \$34.95/14.95*).

Attractive albums salute two ageless stars. **Marilyn Monroe: A Never-Ending Dream**, edited by Guus Luijters, and **James Dean Revisited** by Dennis Stock assemble choice photographs recapping the highs and lows of their lives. (*St. Martin's, NYC, \$22.95; Chronicle Books, San Francisco, \$25/14.95*). △

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Chicago Through the Lens for *Rent-a-Cop*

by Nicoletta Dentico

Produced by Raymond Wagner
Directed by Jerry London
Giuseppe Rotunno, ASC, director of photography

"The idea of working with Burt Reynolds, whom I had met again in Venice after many years, sounded exciting," says famed Italian cinematographer Giuseppe Rotunno, surrounded by the relaxing atmosphere of his elegantly furnished flat in the center of Rome. "I was also interested in the possibility of having a new filmmaking experience with a director I already knew. And, last but not least, I had the chance of shooting Chicago."

"I adore cities at night; in fact, I have an important scheme in the works for permanent city night-lighting. So, whenever I have the opportunity of seeing a new city, especially at night time, with my lighting, I am always very interested. And this time it was Chicago, a city which has always been a traditional reference point for many filmmakers. Not to speak of its importance not only in terms of architecture, but also from the point of view of American history. That made the project all the more interesting."

Rotunno brings nearly 45 years of filmmaking experience to *Rent-A-Cop*. The film marks the second collaboration between the Italian director of photography and outstanding television director Jerry London, who in fact is making his motion picture directorial debut. They had previously worked together on *The Scarlet and the Black*. On this occasion, as Rotunno explains, "despite the filming speed of that mini-series (about six weeks), shot with several cameras and two or three location changes a day... we worked with perfect organization, and with very satisfactory results."

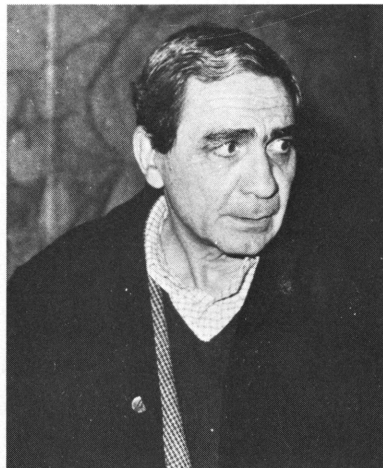
On signing to direct *Rent-A-Cop*, London called immediately to see if Rotunno was available. As luck would have it, he was just finishing a project in time to work on the film. Rotunno's presence, undoubtedly, was a helpful ingredient for director London, not only artistically, but also psychologically. "He's great to work with," said London. "He's a very gentle man, who never gets rattled and I'm very lucky to have him."

One of the world's most noted cinematographers, Giuseppe Rotunno, ASC, started out at the age of 15 as a photo lab technician at Rome's Cinecittà studios and worked his way through the ranks up to lighting cameraman. He has worked with such luminaries as Stanley Kramer, John Huston, Federico Fellini, Luchino Visconti, Fred Zinnemann, Alan Pakula and Bob Fosse. His most recent feature achievement is *Julia and Julia*, directed by Peter del Monte and produced by RAI, the first experimental attempt ever made at filming a complete movie in High Definition TV.

Lifelong training and preparation, aimed at seeing and transforming images, provides Rotunno's most valuable source of experience; it is certainly the key needed to interpret and understand his approach to any new work. "I've been training my eye for years in all possible ways: through painting and through museums – Italy itself is like a big museum – through natural daylight and all sorts of artificial lighting," says Rotunno. "So, when I'm given a new screenplay, I just need the time to forget every-

thing I was doing before, so that I can throw myself completely into my new adventure, with a trained eye, my feelings and preparation."

According to Rotunno, light can tell a story by giving more or less importance to things. It makes them important by taking them out of the dark, making them visible. The story hinges on these things rising to the importance they deserve. "On reading a script, a certain need develops inside me that I must adapt to the story. In every story I read this need is different, both in terms of atmosphere



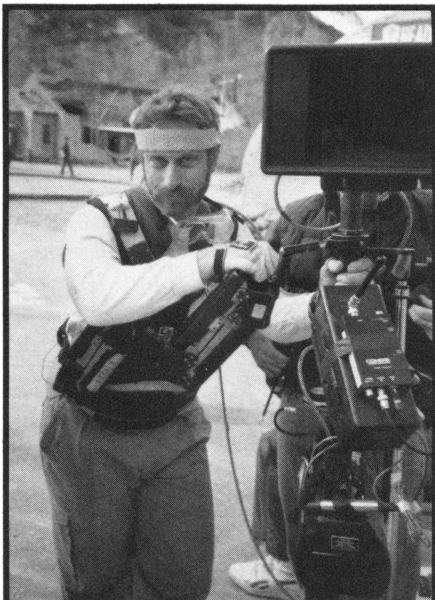
and shape. Light gives shape and creates an atmosphere which is variable from story to story. Indeed, atmosphere may vary, according to the faces, even within the same story."

That particular attention to the actors' faces, representing so much of Rotunno's lighting style ("In one face I can read the story of a whole life, the authentic truth of one person"), emerges as a distinguished feature of *Rent-A-Cop*. In Rotunno's view, this is the most challenging and stimulating aspect of the film, at least as far as the faces of the two lead actors, Burt Reynolds and Liza Minnelli, are concerned.

"It is not the same thing lighting faces like Burt Reynolds and Liza Minnelli's as it is lighting other faces," explains Rotunno, forcefully stressing the remarkable personalities of the two artists. "Their faces are feverish. They are spacial, in fact. It is like lighting a city. And I was very interested in bringing out everything they had inside through their eyes, that is through their individual features. My goal was to tell the story through their capability of

Opposite page: Faces tell the story of the camera work in *Rent-a-Cop* as illustrated by the stars, Minnelli and Reynolds. Left: Giuseppe Rotunno, ASC. Below: Santa Claus Reynolds gets the drop on shop-lifter Richard Wilke in scene from the film.





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expression."

Rotunno remarked that lighting these faces was by no means easy, in view of what he specifically wanted to attain. He was therefore at a maximum concentration, because, as he clearly states, "Their faces were telling the story."

In spite of *Rent-A-Cop's* terrifically suspenseful plot, twisting and turning its way through Chicago's seamy world of police corruption, drugs and prostitution, it is virtually the highly complex, unusual and amusing relationship between detective Tony Church (Reynolds) and hooker Della Roberts (Minnelli) that is crucial to the flow of this romantic-thriller.

Therefore, based on the specific need the story inspired, the lighting style Rotunno sought was dramatic but also ironic, this two-fold atmosphere being, as he sees it, the movie's key:

"The film is a typical American comedy, related to the old stories about Chicago, stories of mafia bosses, gangsters and private police. But it's also ironic. Mainly ironic, in fact. If, on the one hand, I tried to create an atmosphere of heavyweight drama with the use of sharp shadows and lights cast on the actors' faces, on the other – still playing with their looks and expressions – I tried to create an atmosphere of humor and light-hearted fun."

Rotunno shot everything with Arriflex III BLs, using Zeiss high speed lenses. His film stock was Eastman Kodak throughout. He noted that there were hardly any single camera shoots: "We used two cameras most of the time. Jerry London likes using two cameras, if he can. And I'm personally quite used to it; when I worked with Visconti, in fact, we used to do a lot of three camera shooting. After all, using one or two cameras is almost the same thing."

Chicago, the movie's location, is virtually *Rent-A-Cop's* third important character – "the third face of the story," in Rotunno's words. The city made an incredible impact on him, and he found

shooting exteriors extremely challenging and stimulating. Rotunno says, "Chicago made a fundamental contribution to the movie's atmosphere." (Interiors were filmed at Rome's Cinecittà Studios.) "The shooting of a famous night club in downtown Chicago – a very popular place where real jazz is usually played – was a particularly effective moment of the film," explains Rotunno. "We tried to light Chicago as well as possible, and I think that with those sequences and the exterior locations one can feel and see Chicago in a special way."

Shooting in cold Chicago, however, implied working in critical conditions as well. "From the very beginning, for example, we had to work on a very narrow footbridge situated under one of Chicago's bridges. The temperature was below zero, the platform was nearly at water level, there was very little light, and we could hardly move. In conditions like those, we could not use the Steadicam, so my assistant and I had to resort to using the camera manually. It is generally very hard to work under such stress. You know you have to do things quickly, so that actors – in this case Liza, who was dressed with light clothing – do not suffer too much from the weather."

Rotunno availed himself of two camera crews, an American crew in Chicago, and an Italian crew in Italy; but he always worked with the same camera, and he collaborated with the same assistant, chief-electrician and chief-engineer. "We almost always shot at night, so we had to create real artificial light, in order to get the impression of lights coming from signboards and lightposts across to the audience." There was no fixed color scheme in the lighting, however. "I never have a fixed scheme," says Rotunno, "every place has its own colors. So, I adapt the colors take by take. In the case of the night club, for example, I used some colored lights to achieve certain typical effects. Other locations, on the other hand, were lit in a rather frightening way, because I wanted the audience to feel what the char-

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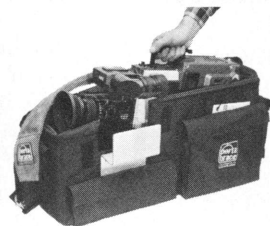
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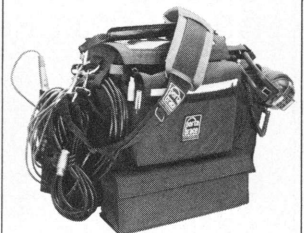
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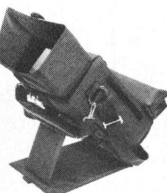
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acters – who were shaking with fear, maybe, or were in danger – were feeling."

We cannot speak of improvisation in Rotunno's work as director of photography. His approach to each single scene or take appears to be grounded on a creative lack of pre-determination: "When I work, it is as if I am developing impressions I get in a particular moment by certain light conditions, which I may provoke at times, or which may be occasional. When I go to a certain place," he goes on, "I may find that it cannot be lighted the way I had first imagined it. But then I can obtain the same result through a different solution, which the environment itself may suggest. The important thing is to achieve the same atmosphere in the end, the same taste, the same meaning of the light."

From Chicago, Rotunno moved to the more familiar Cinecittà Studios in Rome, where all the interior locations of the film – the house of an American boss, the flat of a female character and a hotel – were reproduced. Rotunno prefers doing studio work, because in his view this gives greater leeway to the story. "The times of our neo-realistic cinema, when we used to film in the streets, are over now, I think," he says. "Those truths we sought then, realistically, in little city streets, can now be reproduced, in fact must be reproduced, by inventing them in studios."

"I generally look for the truth when I shoot. I try to convey the right sensations, the real ones. I am fond of stories about characters, about human beings." In this pursuit of truth, any technical device may prove helpful, Rotunno believes. On the contrary, he determinedly tries to avoid every trick that makes things look as they are not: "I don't like to deceive the audience, unless the story of the film requires it. I'm interested in allowing actors and the director to communicate directly with the audience as immediately as possible. Photography should be a bridge, rather than a separating barrier."

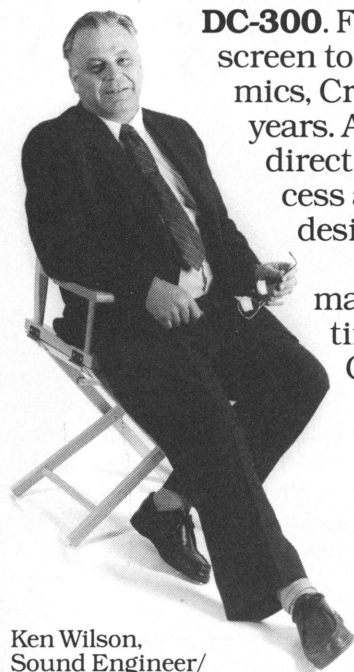
For this reason, the cinematographer must not allow his self-centeredness to emerge. "Photography for its own sake can also be dangerous, whether it is beautiful or not. A fantastic vision which has nothing to do with the story may distract the audience," whereas the story remains in Rotunno's approach the only real priority. So much so that, as he says, "I'll destroy my equipment if need be."

Being mainly an artistically oriented cinematographer, Rotunno explains in his gentle and relaxing way: "My work is to create atmospheres, and the shooting equipment interests me only to a certain extent. That is, to the extent that I have to know what remains of my work when using it, or what I have to modify in order to accomplish that precise idea, that particular atmosphere. In other words, what the equipment takes away from me. I am no slave to technology, though. Of course, I depend on it, because it is necessary. But then what really interests me – beyond any technical equipment – is to think of my usage of light, and of my work, as a kaleidoscope, where every little, almost imperceptible, movement of the three basic elements (the key light, the fill light and back light) determines a new invention, a new creation, a new outcome." △

The author is a free-lance writer who lives in Rome.

Things to Come...

Cinematographer awards from the ASC and from the Academy will be covered in our April issue. These stories will also include nominations for special effects awards and scientific and technical awards, as well as a story about a lifetime of movie making from George Folsey, who is the recipient of a very special lifetime award from the ASC.



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Occident Trotting – A Strange Title

by Julian “Bud” Lesser

The world's first movie producer never got a screen credit because he did not know he had produced a movie. The year was 1879 and movies had not been invented yet.

Producer Leland Stanford scored a smash hit with the world's first photographed movie, *Occident Trotting*. It carried him and his cinematographer, the self-named Eadweard Muybridge, into a carnival of fame. Their California association then fractured, not over money but over credits.

It all began with a dare:

Stanford wanted to prove that all four hooves of a trotting horse leave the ground at the same time.

Besides being a railroad president and a former governor of California, Stanford was a horse expert. Born in 1824 and raised on a farm near Albany, New York, he had an uncanny, appreciative sense of animals. He began training horses in Sacramento

about 1870 when he firmed up his “all-four-hooves” conviction and gambled his reputation on it.

He argued with Eastern horse people about trotter hooves in the air, an action too fast for the eye to see. It had never been depicted, not even by the classic Greeks, skilled at sculpting horses in marble. Because horses were the main transportation in 1870, any question about them was as important as a question about cars today. For Stanford, the debate was at a personal level. He was seen as a bemused Westerner by other horse connoisseurs. His intelligence was being questioned.

Stanford had been impressed by anatomy professor Etienne Marey's experiments in Paris with trotters. Marey had attached ink filled syringes to horses' hooves to make crude charts. Stanford discussed the thinking with his editor friend in San Francisco, Fred MacCrelly, who made a suggestion:

Stanford might prove his theory with the new craft, photography. MacCrellish recommended San Francisco photographer Eadweard Muybridge for the job.

Photography could also prove Stanford wrong, but he accepted the challenge. He invited Muybridge to meet him at his Sacramento home to discuss the photographic possibility.

Each man carried vivid credentials to the meeting.

Stanford had practiced law, then came to California in the gold rush as a storekeeper. A burly 200 pounder, he was quiet and slow-spoken. While in his twenties, Stanford was appointed justice of the peace by his frontier mining village, Michigan Bluff. According to Stanford biographer Edwin P. Hoyt, a miner complained to Stanford that the town blacksmith, a hot-tempered brute named Diltz, beat him up. Stanford had to act. He called a town meeting "to hear witnesses," then fined Diltz. Diltz glared at Stanford and rose to punch him. Stanford, brawny from lifting barrels in his store, gazed back at Diltz, motionless. He eyeballed Diltz down.

Stanford was also a master executive and, like today's young studio heads, he started early. At 35 he managed the infant Republican Party in Sacramento, the first delegation to nominate Abraham Lincoln for president. The party then ran Stanford, 37, for governor of California in 1861. He won by a large vote. That year he also became head of the Central Pacific Railroad and supervised building the line through the Sierras. He dug its first spadeful of earth in Sacramento and sledgehammered the golden spike in Utah to complete its national linkage in 1869.

The man he was meeting in 1872 – Muybridge – was considered the finest photographer on the Pacific Coast. His spectacular Yosemite scenics sold widely as postcards and for stereoscope inserts. He was official photographer for several U.S. government expeditions. He loved his work. "He generally spurned money and would never make a view if he did not see beauty in it," said his photo studio senior, William Rulofson.

Muybridge was born in England in 1830 as Edward Muggeridge and, like a later Briton, Cary Grant (nee Archie Leach), he arrived in California with a new name. The "Eadweard" he took from ancient Anglo-Saxon kings.

Hardy, he carried heavy wooden cameras and crates of glass plates up mountains alone. In contrast to Stanford's bulk and black hair, he was wiry and his hair had turned partly white after a stagecoach accident. He dressed as an artist, rejecting the accepted Stetson or derby to wear a floppy, wide-brimmed felt hat.

Verbally effusive, Muybridge wrote many letters and copious memoirs. In comments accompanying his published photos, he used literary style to describe himself as "the photographer." The history of *Occident Trotting* relies heavily on Muybridge's documentation because the taciturn Stanford wrote little about his own activities. Stanford even asked a doctor friend to write his book on the horse movies.

Stanford University Museum of Art 12038/Stanford Family Collection



Jean Louis Meissonier's 1881 oil of Stanford. Note Muybridge photos near his left elbow. Opposite page: Occident trotting – 24 frames of movement.

Muybridge worried about meeting Stanford. He wrote MacCrellish, "I candidly admit I was... amazed at the boldness of your proposition."

With good reason.

"Stanford's trotter would whip by Muybridge's still camera at over 20 miles per hour," says cinema historian Geoffrey Bell. "This was when emulsion speeds were so slow, photographers were using clamps to hold portrait subjects' heads rigid."

"The fastest shutter available to him was probably 1/2 second," adds still photo historian Stephen White. "Most photographers exposed by hand. They pulled off a lens cap and snapped it back on, timing by feel."

Thus, Muybridge wrote that in his first meeting with Stanford, he told the governor that photographing a horse at full speed was "unheard of. Photography has not yet arrived at such a wonderful perception."

Stanford replied, "I think if you will give your attention to the subject you will be able to do it, and I want you to try."

Muybridge agreed to try and as far as is known, they made this arrangement: Stanford would finance and have final approvals. There would be no fixed budget. Muybridge would supervise all photography, and retain both the copyrights and any patents developed.

Nothing was said about credits. As a result, Stanford was identified as the patron, the person who paid the bills and furnished the horse.

Stanford chose the Union Park Race Course, Sacramento, for tests. He "cast" his favorite horse, Occident, as the trotter.

Occident was a small gelding who had been

Muybridge at the time of the Occident experiment. Below: Flora Muybridge, photographed by her husband c. 1872.



hauling a butcher's cart until Stanford sensed potential in the way the animal moved and bought him. To train Occident, Stanford applied a personal magic. The method involved gentle treatment to gain the animal's confidence, maximum speed under whip in short bursts only. The year after *Trotting* started, Occident tied a world's speed record.

To catch the fleet Occident with his still camera, Muybridge had to invent a faster shutter. He devised two sliding wooden slats, much like today's focal plane shutters, except his two moved opposite to each other, powered by India rubber bands. By two

apertures crossing each other, the calculated exposure could be reduced to 1/2,000 second.

Muybridge showed Stanford one still that he believed showed all Occident's hooves in the air. The image was blurred and grainy, yet it was sufficient to encourage Stanford, who remarked, "I am convinced. Now I will convince others."

But the work was halted abruptly in 1874 by a murder.

Muybridge's wife Flora birthed a son whom, Muybridge discovered, he had not sired. He immediately stalked his wife's lover to a card party in Calistoga and killed him with a single pistol shot. He surrendered to guests, was jailed in Napa County and held for trial.

The premeditated killing posed a dilemma for Stanford. His wife, Jane, "was a very moral and proper lady," says Professor Henry Breitrose, head of Film Studies, Stanford University. "She shared with her husband the management of their affairs. She was no shrinking violet."

Stanford, respecting his wife's and his positions, publicly distanced himself from Muybridge.

Privately, it was different, although Stanford admitted nothing. Muybridge had an outstanding legal defense and was acquitted ("justifiable homicide") in 1875. Stanford attended the trial. All signs pointed to him as the benefactor.

It was best that Muybridge "lie low" until the onus abated. He sailed for Panama and Guatemala to photograph exotic panoramas. In addition, Stanford commissioned him to record attractions for travelers, then shut down *Trotting* production.

During Muybridge's absence, Stanford bought a farm to train horses near Menlo Park, 45 miles south of San Francisco. He added contiguous property until he owned over 15 square miles. He named this ranch Palo Alto Farm and made it a Mount Olympus for horses. He built a three-story red barn capping multiple stables and training tracks, whose trotters set 18 world's speed records between 1881 and 1891.

"Trotters probably interested Stanford because their speed is 84% that of thoroughbred race horses," says Dr. James Rooney, director, Gluck Equine Research Center, University of Kentucky, "but they maintain speed longer. And they are useful. Trotters haul carriages and wagons."

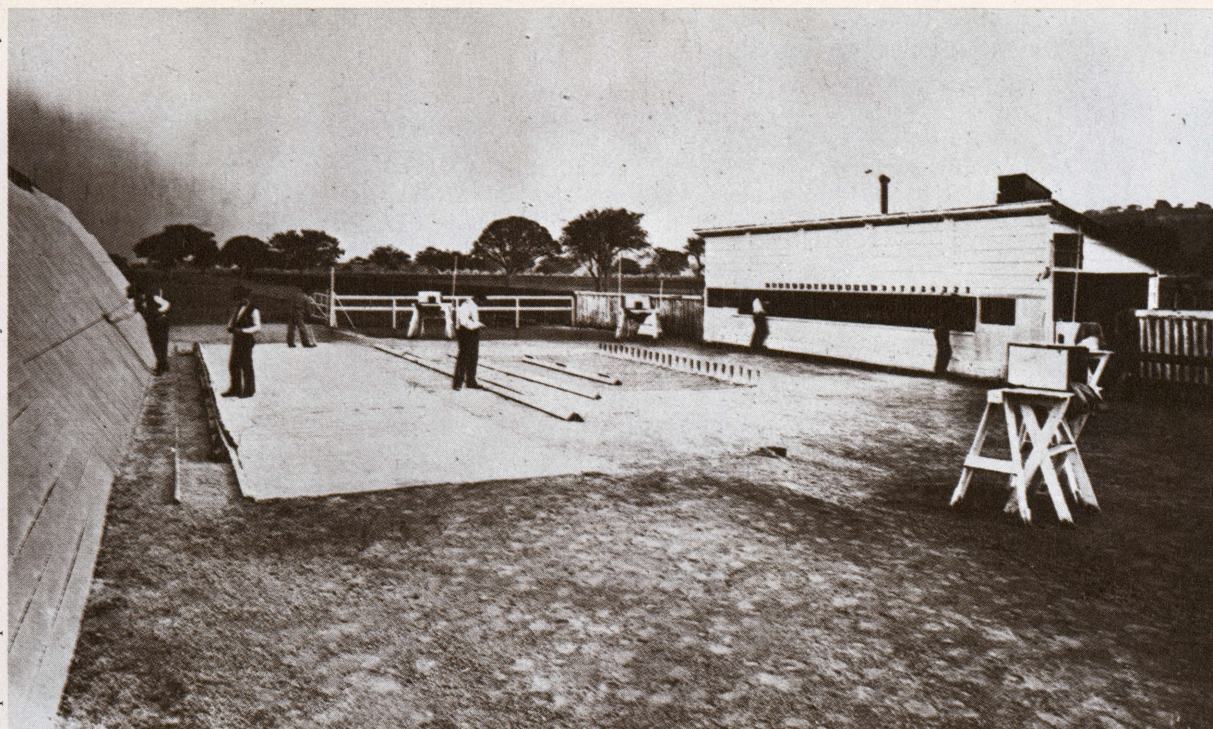
The trotter farm became the main shooting location after Muybridge returned from Guatemala. Actually, Muybridge was not "on call" continuously. He was more like an independent contractor. He left during waits between tests while new equipment was built and shipped. He had time to independently cover the Modoc War, San Francisco cityscapes, and Stanford's homes and family.

Stanford had been thinking. He surmised that a single camera working to pinpoint Occident's fraction of a second in the air was too chancy. According to Kevin MacDonnell in his book, *Eadward Muybridge, The Man Who Invented the Moving Picture*,

Bancroft Library, University of California, Berkeley

Stephen White Collection

The "set." Cameras were housed in shed-darkroom at right. Background reflector at left was tilted back 30° to reflect maximum sunlight for back lighting.



Stanford asked Muybridge, "Would it be possible to line up a number of cameras in quick succession?" It would insure catching every fraction of Occident's gait.

It was a \$64 billion question, but neither man was aware of the implications. Until then, the two were making pictures of motion. Thereafter, they would be making motion pictures.

Muybridge's solution to Stanford's request is what an experienced cinematographer today might devise for the same assignment: Record a horse run-by with still cameras. No Mitchell, no Arri, no motion picture camera of any kind would be available.

Muybridge designed and ordered 12 still cameras from Scoville, New York, with lenses from Dallmeyer London. He placed them shoulder-to-shoulder, 21 inches apart, on an outside track rail facing a set across the track. He built a shed over his cameras to protect them in fixed positions. The shed was also his darkroom where he coated, loaded and developed his collodion wet plates.

For the set Muybridge built a white canvas backing 15 feet high by 50 feet long against the inside track rail. On it he marked a grid so each frame could disclose minute changes of Occident's movement. He put numbers on top to slate each frame. He tipped it backwards 30 degrees to kick in maximum sunlight. That built contrast, but he wanted it; Stanford needed sharp detail, even if the images were silhouettes. He reflected in additional light by sprinkling white lime on the track.

His puzzle was how to trip the shutters. Occident would pass all cameras in under 1/2 second, too fast to hand trip evenly. Muybridge, or perhaps Stanford, decided that the horse going through could precisely trip the shutters and take his own pictures.

Muybridge placed rods under the track. Occident's sulky wheels would hit the rods and trigger the shutter action.

However, the shutter trippers remained balky. Stanford sent that problem to technicians at his Oakland, California railroad yard. Seventeen-year-old engineer John Isaacs suggested electric circuitry. He and Muybridge tinkered and perfected workable magnetic trippers. The rail technicians thus became the world's first special effects department.

"Like many special effects groups these days, its personnel did not come from a film background," says Professor Breitrose. "They came from engineering. In current special effects facilities you'll find many people from engineering and pure science."

The 12-camera tests were so good, Stanford arranged a press preview. Guests witnessed a run-by shoot and Muybridge's immediate development of prints. Correspondents, brought from Sacramento and San Francisco by train and carriage, were dazzled.

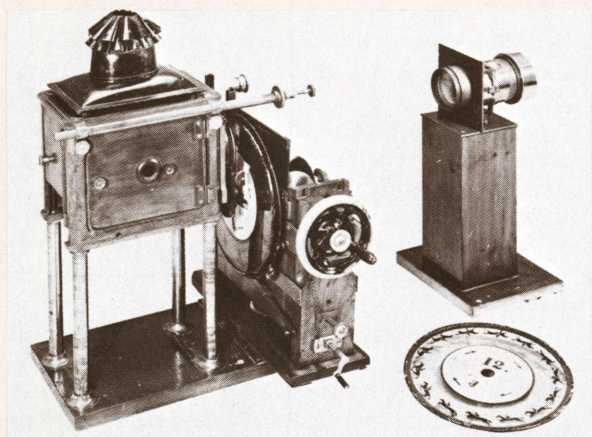
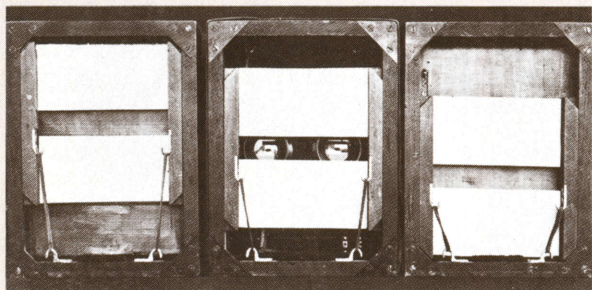
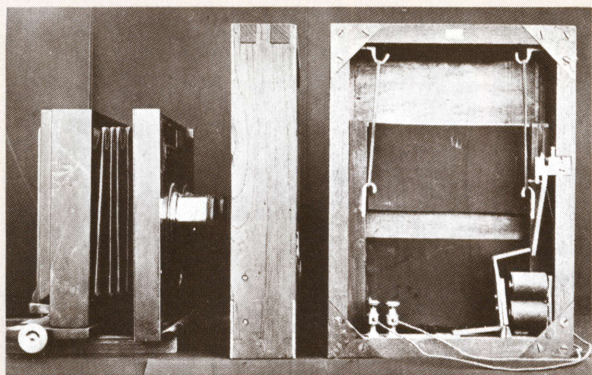
"The experiment was to reproduce the action of a horse at every point in his stride," reported *Pacific Life* June 22, 1878. "The result was so successful as to be beyond...cavillings. To Governor Stanford must be accorded the merit of first broaching (the plan). To Mr. Muybridge, great praise is due for...such a grand impulsion in the history of...photography."

Photography had solidly proven Stanford's contention about hooves in the air.

Trotting also opened a window of promise. Further wonders awaited in the motion cameras. Stanford approved new projects.

— They doubled the number of cameras to 24. It yielded the superb 1879 sequence with Occident reprinted here. Twenty-four was a prophetic number.

Top: Muybridge's Scoville cameras, side and back, showing the magnetic shutter tripper. Center: Front view showing rubber-powered shutters. Double lenses were for stereoscopic option. Bottom: Muybridge's pioneer projector put his inert horse stills into motion.



Since the introduction of sound on film, theatrical movies have been projected at 24 frames per second.

— They made a sequel, *Sallie Gardner Galloping*. They switched from a trotter and galloped Stanford's racing mare, Sallie Gardner, past the cameras. Sallie pulled no sulky. She carried a jockey. So instead of wheels hitting rods in the track, Sallie's chest broke strings across the track to trigger the shutters.

Galloping disclosed something unexpected. It shocked the artistic community. The photos contradicted the way galloping horses had always been painted and sculpted. Ever since primitive man, artists had shown gallopers hunting, in battle, in races or wherever, speeding with their legs extended in the air, in the hobbyhorse position still seen in children's nurseries. But Sallie's galloping legs were bunched or akimbo in the air, not extended in pairs. *Galloping* demonstrated that famed paintings were unreal. It changed the rules of art instruction.

— They reached into Stanford's barnyard to

make *Pig Running*, *Goat Running*, and other menagerie runbys.

— They made *Man in Motion*. Stanford invited tumblers from the San Francisco Olympic Club to somersault down the track.

— They scored a "first" for the movie industry with each step. One step merits an overdue salute to Muybridge, made clear by Production Manager Francisco "Chico" Day (*Patton*, *Shane*, *Ten Commandments*). Day asks, "Who yelled up the track, 'We're ready. Run him through!' " That is, with 24 cameras cocked and Occident hitched to his sulky, pawing the dirt, who shouted for the driver to move?

"Muybridge was in charge," says Day, "so it was Muybridge or someone at his signal." With that call for action, Muybridge became the world's first motion picture director. "Stanford was the money man," adds Day, "so he would be the producer. Muybridge was the director."

— Their final project was monumental. Without it the photography was frozen. The 24 stills were as dead as any film case waiting in a projection booth today. *Occident* had to get up off the floor and run. He had to be projected. But there were no projectors.

Stanford asked Muybridge to devise something to show his horses running for his friends. Muybridge drew on toys Stanford collected, a magic lantern and a turning zoetrope that made drawings appear to move. In the lantern he revolved a glass wheel with *Trotting* transparencies around the rim, similar in design to the current Kodak Disc Camera load. To mask the change of frames, he counter-rotated a wheel with black arms like a Maltese cross. It was the shutter. Together, the elements worked. In several ways, the two men gave movies a running start.

Muybridge projected *Trotting* and other subjects on a wall in Stanford's Menlo Park home to delighted guests in the fall, 1879. The next year, Muybridge projected the program at the San Francisco Art Association hall to the world's first paying audience. The periodical *Alta California* asserted presciently that Muybridge "laid the foundation of a new method of entertaining."

Trotting and its sequels reached sufficient stature to arouse antagonists.

"Bosh," reported the *Philadelphia Photographer* in 1878.

An Australian paper carried a complaint. The *Work* had "torn into tatters ten thousand prized paintings of horses."

Parisian sculptor Auguste Rodin said, "The artist is truthful... photography... lies."

The *Boston Globe* headlined, "Horses in the air. Professor Muybridge and his Queer (Projector)."

"Turfmen sneered at a horse getting itself into the position represented," writes author Kevin MacDonnell.

Regardless, *Trotting* moved steadily upward. American publisher Currier and Ives had issued a lithograph, *Occident Trotting* in 1873. Currier engravers added lines to the photo to clearly and artistically

display all four hooves in the air.

French professor Marey, whose studies had originally intrigued Stanford, saw the Farm stills in the French magazine, *La Nature*. He wrote Muybridge, "I am lost in admiration," and invited Muybridge to collaborate with him.

As acceptance mounted it was time for the two men to take bows. Stanford took his with accustomed reserve. He methodically planned a book on his findings, *The Horse in Motion*. He asked a doctor familiar with anatomy, J.D.B. Stillman, to write it. To publish it, he chose James R. Osgood, Boston, whose list included Henry W. Longfellow and Harriet Beecher Stowe. Stanford arranged for fine artists to delineate the photos as had Currier and Ives. He limited his remarks to a short preface stating:

"I have for a long time entertained the opinion that the accepted theory of the relative positions of the feet of horses in rapid motion was erroneous. ... Under this conviction I employed Mr. Muybridge, a very skillful photographer, to institute a series of experiments."

The validity of his conviction was easily granted, but the ingenious way he proved it commanded rising awe coast to coast—and beyond. When Stanford went to London with his family, he was toasted by leading citizens of England for making possible the new technique.

The Stanfords went to Paris in 1881 to have his portrait painted by the lion of French artists, Jean Meissonier. Meissonier was solidly booked, but he became entranced with Stanford's Trotting stills. He not only painted a portrait of Stanford with the stills, he "proposed that Muybridge be brought to Paris to elaborate (on them)," writes Dr. Robert Bartlett Haas in his book, *Muybridge, Man in Motion*. "Muybridge and Professor Marey should work... under Stanford's patronage." A flattered Stanford brought Muybridge to Paris.

When Muybridge arrived, "he was rewarded with... undiluted glory," Dr. Haas continues. He and Marey became devoted colleagues... Marey gave a reception... with Muybridge as the guest of honor."

For Muybridge the acclaim was intoxicating. He wrote Stanford's assistant, "...I should have blushed."

He was a gifted entertainer. His 1½ hour presentation of the Farm photography was a sensation. He first projected slides of "false" horse paintings dating back to those in Pharaohs' tombs. To audience hilarity, he exposed imaginative gallopers painted by famed artists and contrasted them with the truth he recorded at the Farm. Then he made the animals move, and the tumblers somersault. He toured this one-man road show on the Continent and in America for over a decade.

The era favored Muybridge. There had never been a film producer, but there were renowned photographers like Louis Daguerre and Matthew Brady. So photographer Muybridge was seen as Trotting's sole maker. Muybridge's ownership of the copyrights and



A sequel: Stanford canters his pony.

patents verified the impression; he had been selling the Farm stills for years.

At its apogee the productive association soured. The two men became foes. They had no way of knowing that collaboration is a movie "must," even after a show is finished.

Injured pride unravelled the bonds.

Stanford's injury came at the social level. He was apparently regarded by the painter, Meissonier, as merely another rich client. Meissonier gave a second party to honor Muybridge at the Meissonier home. Among the 200 guests were leading Parisian artists, writers and scientists including Goupil, Bonnat, Millet and Alexander Dumas. The guest list omitted Leland and Jane Stanford.

The Stanfords left Paris the same day.

Muybridge's trauma arrived with the 1881 publication of Stanford's book, *The Horse in Motion*. The text relegated him to minor participation and ignored writings he had prepared. He resented the preface stating Stanford "employed" him.

Stanford's book brought Muybridge a stinging putdown in England, his mother country, after the Royal Institute booked his movie presentation. The excited audience included the Prince of Wales, the Duke of Edinburgh, Gladstone, Huxley and Lord Tennyson. Muybridge asked the ultimate reward, that the Royal Society publish his book, *Attitudes of Animals in Motion*.

The Society judge rejected him because his conclusions "do not differ in any notable manner than those of Stillman. They are certainly much less... well expressed."

Thereupon, a devastated Muybridge sailed for Boston to sue publisher Osgood. He alleged Osgood injured him by publishing Stanford's book. He claimed ownership of the photos and sole vending rights.

Osgood denied responsibility, replying that they owned nothing, that they were only Stanford's agents. The court agreed and dismissed the case.

Muybridge then sued Stanford, seeking large personal damages. He claimed the book diminished



his employment. Stanford's reaction is in a letter he wrote Stillman, "I fear the fame we gave him has turned his head." Stanford did not countersue.

Damaging to Muybridge's case was the testimony of John Isaacs, Stanford's young rail engineer who suggested the magnetic shutters. The court held for the defendant. Muybridge lost. Stanford was vindicated, but he did not "win."

His book sold poorly and, sued for his efforts, he abandoned movie making for other activities. His only child, Leland Junior, died of typhoid fever in 1884. The Stanfords organized a university in his name and donated their entire Farm. In 1885 Stanford was elected to the U.S. Senate.

With Stanford out, Muybridge gained backing from the University of Pennsylvania in 1884 to continue production. He made over 700 subjects of people and animals in motion. Here Muybridge fingered the ultimate potential of the motion picture, the ability to transmit the human condition. In his novelty sequences,

- A mother spans a naughty child.
- A woman pours a bucket of water over another woman who runs away.
- An astonished waiter serves wine to a seated jackass.

Historians have dismissed these forays with an "oh, pshaw" reaction, excusing Muybridge for attempts at humor.

However, Hollywood can view them differently. They can be seen as the first movies to depict how people think and feel and act in ways that make them human. Audiences can tire watching how a man climbs a ladder. They can be entertained watching a thief climb a ladder to a high window when they see an open garbage truck about to hit the ladder.

However, once Stanford and Muybridge separated, progress in public movies went dormant. Nothing in projection could match *Trotting's* draw until 16 years after its 1879 "premiere." Finally, the Lumiere brothers showed *Workers Leaving the Factory* with their camera projector in 1895, using Edison style roll film. Thereafter, an industry accelerated with the Edison-Armat-Dickson projector (1896), Georges Melies' *A Trip to the Moon* (1902) and Edwin Porter's *The Great*

Train Robbery (1903).

Stanford died in 1893, Muybridge in 1904.

Props from their story exist as though they still lived. Meissonier's painting of Stanford with horse frames hangs in the Stanford University Art Museum. A working Muybridge projector rests in the Heritage Museum, Kingston upon Thames, England.

Two items are alive. One is the modern motion picture in thousands of theatres and on millions of television screens, each a fast-moving series of stills that originated with *Occident Trotting*.

The other is the red barn, Stanford University's direct link with its founder's rural beginnings. It now shelters Occident's kin. △

"Bud" Lesser produced theatrical and television films, was a member of the Academy Documentary Committee and the Marine Corps Photo Section. He was sales rep for J.E. Brulatour (Eastman Films) in the 1930s. His father was film pioneer Sol Lesser.

Resources (unattributed)

Heritage Museum, Kingston on Thames, England: Marion Shipley. Los Angeles Public Library: Margaret Herrick Library, Academy of Motion Picture Arts and Sciences. Stanford Historical Society; Dorothy Regnery. Stanford University: Archives, Robin Chandler; Art Museum, Carol Osborne and Susan Roberts-Manganelli; Knight Fellowship, Harry Press; News & Publications, Cindi Romaine. Sunset Magazine: L.W. Lane Jr., Floyd E. Shaw. U.C., Berkeley, Bancroft Library (Americana): Lawrence Dinnean, Ollin Blue. U.C.L.A., Extension (Journalism): Eleanor Harder, John Wilson, Joan Zyda. Thursday Writers' Group: Mary McDevitt, Randy Malat, Paula Bernstein.

Books - Newhall, Beaumont: History of Photography. Mozley, Anita and Haas, Robert Bartlett: Muybridge, the Stanford Years. Tutorow, Norman: Leland Stanford, Man of Many Careers. △

Rerun the World's First Movie

With scissors and a stapler you can re-run the world's first motion picture. It is an actual short subject, a bit under one second long.

On page 34, *American Cinematographer* reproduces Muybridge's photography of Occident trotting, published in 1881. Cut out the frames and staple them together on the left edge in the order of Muybridge's numbers (circled) and riffle the pack with your thumb. Occident will trot again, exactly as he did a century ago.

Frames 6 and 16 show Occident's four hooves in the air.

While the original photography was on 24 separate glass plates, it is the same configuration as any movie today. The only major difference is the improvement Thomas Edison added in the late 1880s. Edison placed all frames on a continuous roll of film with perforations at the sides. Claws entered the perforations and pulled the film forward.

With that improvement, *Trotting* evolved into motion pictures as we know them.

Stephen Burum_{ASC}



© Eastman Kodak Company, 1987

on film:

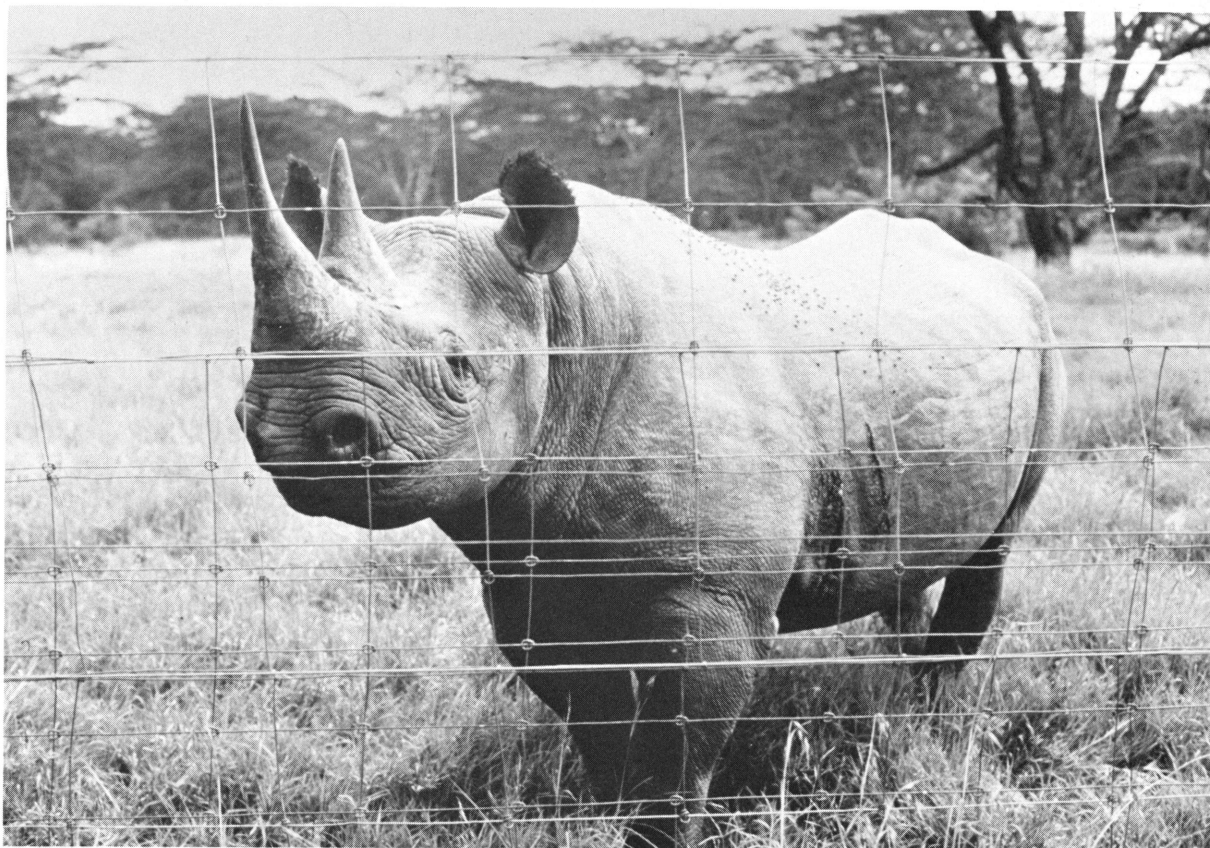
"I always knew that I wanted to be a director of photography. It's a struggle because the better you get, the more you test yourself. When you start, you struggle with the mechanics.

That's the easy part. Then, you have to work on the aesthetic part. And that's a challenge that never stops. There are a million permutations. It's your mind that makes you different. It's how you observe things. At first, when you are starting a picture, your vision might not be all that clear. But there's a feeling about it. You start with black, and you chisel with light to create a world with feelings and emotions. You always want to give the audience the best possible image. We owe them that, and we owe it to ourselves."

Stephen Burum, ASC, was director of photography for "The Untouchables." Among his credits are "Something Wicked This Way Comes," "Rumblefish," and "Body Double."

Eastman
Motion Picture Films





Photos courtesy of Philip Cayford

Adventure in the African Bush

by Brooke Sheffield Comer

Philip Cayford's *The Rhino War* sets new precedents as an exposé-type documentary. The hour-long program, aired on National Geographic's "Explorer" program, poses and attempts to answer the same question: can Africa's Black Rhino be saved?

Cayford establishes a premise; 90% of the world's oldest living land mammals have been cruelly hunted for the medicinal and symbolic properties in their pre-historic horns. (The horn matter, composed of gelatin and matted fur, is worth twice the price of cocaine and five times the price of gold.) Producer/director Cayford takes his documentary to a new edge. Not

only does he expose the bloody crime of poaching, he reveals the irony of a society (Kenya) unable to feed its poor, where starvation is an incentive to poach, and yet a "shoot to kill" law is enforced against poachers – to protect the dwindling rhino species. Who is at fault? Greedy horn traders, who have created a viable horn market? Africa's unrelenting caste system? Cayford lets the viewer decide.

Cayford, a young London barrister, leaves no stone unturned in his commitment to the complexities of the rhino cause. Brave, bold cinematography, adeptly handled by cinematographer John Davey, helps

bring these complexities to light. Cayford's task might overwhelm someone of lesser experience, or dedication. But the producer/director approached *Rhino War* with considerable expertise. He produced *African Hunters* in '82 for Channel 4 in the UK, and National Geographic's "Explorer." The Saxon Logan-directed documentary, also shot by Davey, won critical acclaim, as a candid look at big-game hunting in Zimbabwe. Cayford has always taken a close interest in other wildlife documentaries, as well as in the cause of the endangered species. "Most of the documentaries I've seen," Cayford remarks, "are beautifully shot, well produced

and presented, and thoroughly worthy in terms of scientific research. I'd be the last person to criticize any wildlife documentary. I hope they'll be made forever." But Cayford did worry that little was being done to reveal the relationship between wild animals, and man as an animal. "Whenever man and wildlife compete, man always wins," he insists.

"Man is not sentimental in areas where large populations of wildlife exist. When man needs space, man will take that space away from the animals who occupy it." He cites the deer and bears that once abounded in Britain. "They're not there anymore," he points out. "Today's highly developed and civilized countries only permit wildlife in certain areas that don't conflict with man's need." But now that man has come to appreciate the aesthetics of wildlife, pressure groups – Cayford among them – are beginning to debate how far man's need can go before it becomes simply greed.

One of the essential issues of *Rhino War* is that most African countries can't afford to debate the priorities of animals versus people. "They're still too concerned with human survival," explains Cayford. "We've got no right to preach to

them, about why they're having such a land hunger conflict. It's after the fact. But it seems idealistic to advocate preservation to the Africans."

Certainly in Third World countries, where different value structures make the economics of hunting quite persuasive, preservation may be a moot point. "But education is important," Cayford stresses. "More programs should be made which explore the relationship between man and the animals he hunts." *Rhino War* is certainly one of those programs.

Rhino War evolved while Cayford was scouting for material with which to make a documentary on the rhino roundups, in which the endangered species are herded into the safety of preserves. Realizing that the preservation issue was only a drop in the bucket compared to the total rhino crisis, Cayford proposed the notion of another project for National Geographic's "Explorer." He won approval for *Rhino War* and began to form a crew. Accompanied by cameraman Davey, a sound man with a passion for zoology, a writer well versed in the ways of rhinos and an American pilot, Cayford embarked on the making of his latest project, traveling on location in North Yemen, Kenya, Zimbabwe, and Burundi, on

the trail of two animals: Black African rhinos, and the humans who poach and trade rhino horns.

Honest cinematography was the key to Cayford's approach. The rhino issue is a controversial one, and Cayford admits that as filmmakers, he and his crew were put in a difficult situation. "We were all jumping into helicopters, while people and animals were being killed," he reminisces. "It was rather like Viet Nam. We were allowed to go into the war zone to film the bodies and the action." African conservationists trusted Cayford and his crew. "That," Cayford explains, "is why we were allowed to do as much as we did. The conservationists don't see themselves as being at the wrong end of a moral issue by allowing poachers to be shot."

Cayford made sure everyone he filmed knew the goal of his project: to make as objective a documentary as possible. "I hope that if I have any reputation at all, it is being honest with the people I'm documenting!" he exclaims. "There was a dilemma, and I wanted to approach it in a straightforward way, to create something that would look fantastic and be thought provoking, to put the various issues out in such a way that let the viewer make his/her own moral



Opposite Page: Living African black rhino in the bush. Left: Desecrated rhino corpse after visitation by poachers.



Rangers in rhino preserve find a kill. Right: Alleged poachers and their rhino horn trophies.



judgments."

Davey's cinematography was intrinsic to the honesty and objectivity that Cayford sought. The cameraman came to *Rhino War* already well versed in documentary filming. His childhood interest in photography blossomed into a filmmaking career after a stint in medical school. He cut his teeth on safety films for the National Coal Board before moving into TV and such novelties as zoom lenses. "We used mostly prime lenses in the coal mines," he explains, "because we had to be careful of the dust."

Davey rose from assistant to operator to cameraman, working on local news shows in England, current affairs programs, music videos for the likes of Sheena Easton, Squeeze and Elvis Costello, assorted TV commercials, and over 250 documentaries including several for Fred Wiseman. He'd done some wildlife documentaries, and came to Cayford's attention via *African Hunters* director, Saxon Logan.

"I did a lot of reading about rhinos prior to going to Africa," explains Davey, who understood the imminent dan-

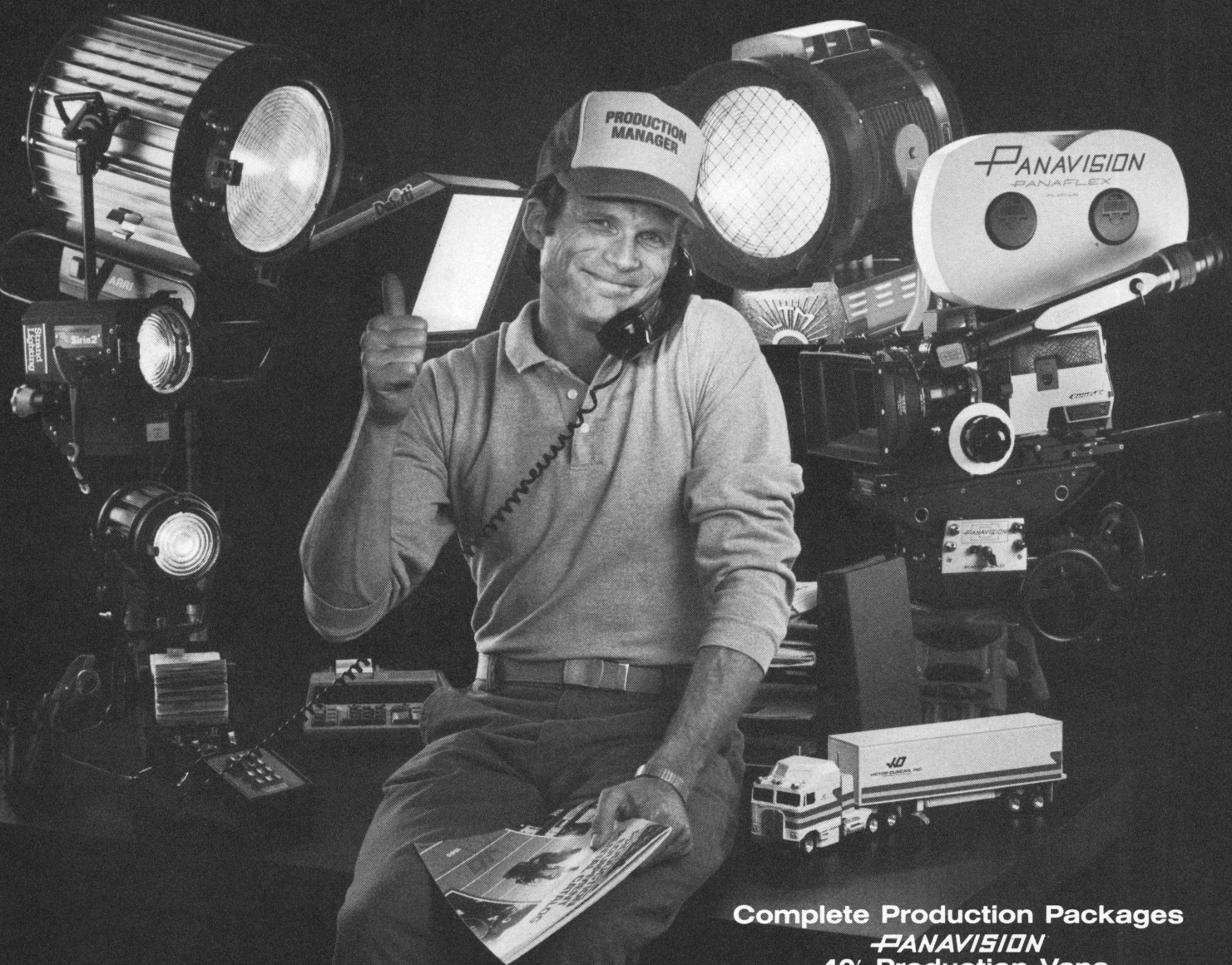
ger of embarking on such an adventure unprepared. He'd worked on a BBC show called *Long Night of the Lions*, directed by Justin Cartwright, in which he shot studies of prides of lions and hyenas. "If you're sensible and careful," says Davey, "there isn't really much danger, unless you're terribly unlucky."

How did Davey achieve what Cayford calls "honest cinematography"? "Hopefully," says the cameraman, "every film I make is shot with honesty. One thing I will never do is set something up and create an artificial situation." Davey was also careful to try to elicit genuine reactions from the people he photographed. Because he was not only dealing with nonprofessionals, but people unaccustomed to the whole notion of a film crew, Davey's work was thus the more difficult. "You're not a fly on the wall," he points out, "you're a person with a camera on his shoulder and you're bound to affect reactions. But if you hang around for a while, people get bored with you and begin to relax."

Cayford and Davey discussed the rhino project, enabling the latter to flesh out ideas with visuals unaided by a storyboard. "Philip had a good idea of what he wanted, having spent considerable time in Kenya and also having a vast knowledge of conservation issues," says Davey. Indeed, any problems that the "Rhino" crew encountered were more physical than technical obstacles. "We had to get to some pretty remote places, and we couldn't always drive."

Camels could be counted on to provide alternate transportation to the crew's four wheel drive trucks. Thank heaven for camels! Crew vehicles fared far less well as they ventured along the rhino trail. "On one occasion," Davey recalls, "the pilot drove the airplane into a ditch trying to make a short cut, and the vehicles suffered flat tires crossing the sand." That was en route to an ideal shooting spot Cayford had found earlier. "It was lovely, but needed more light," explains Davey, who lugged in two HMI sunglasses and their heavy batteries. "We were low on provisions that day, the sound recordist had dysentery, and we had a long walk with heavy gear. It took a lot out of us to work under those conditions," he adds. "Not only did we have to film, but we had to film after hauling two vehicles and an airplane out of holes in the ground." It certainly wasn't your typical bad day on the set, when the caterers bring the wrong kind of salad. Yet despite adverse conditions, "we got what turned out to be possibly the

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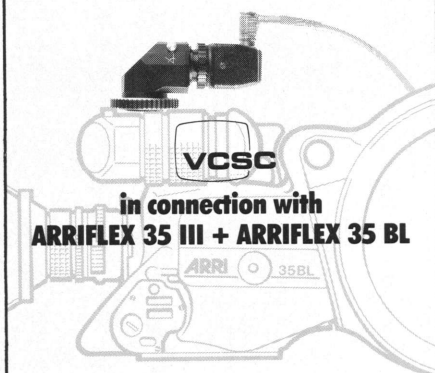
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best sequence we filmed, from a visual point of view," Davey marvels.

Davey shot *Rhino War* on 16mm with the Aaton camera, a particularly good choice for its durability and ability to be handheld. "It's a fine quality 16mm camera," says Davey, who has used Aatons since the mid 70's. "It's quite difficult to get a hair in the gate because of the floating magazine head—it's what we call a floating gate." The Aaton's on-board batteries also offered Davey an advantage; there was no need for cabling. *Rhino War* also used footage from a second film crew, who remained stationed in a Kenya preserve. The wildlife cameraman in Kenya used an Arriflex SSR.

Bulk made 16mm the appropriate choice. "There's no way we could have shot on 35 with a crew as small as ours," Davey explains. "If you have 400-foot mags on the 35mm, it only lasts for three or four minutes. But with 16mm, a 400-foot roll lasts for 10½ minutes. That's why 16mm is so standard for documentaries; it cuts down on crew, equipment and weight. We were able to remain quite mobile."

Only on location in North Yemen, when the crew went undercover to document evidence of the horn smuggling trade, did Davey switch from his Aaton to a Bolex. "We had to go into North Yemen as tourists," he reveals. "I would walk around and take snapshots of the marketplace where rhino horns were being carved into dagger handles." The Bolex, smaller than the Aaton, helped to facilitate Davey's "disguise." But after a period of covert shooting, the team moved on to Kenya, and Davey returned to his Aaton to film Daphne Sheldrick's baby animal orphanage on the outer edge of the Nairobi Game Preserve.

Davey didn't mind the fast changes he'd be called upon to make. While shooting butterflies on the banks of the Zimbabwe River, for instance, he might get a radio call informing him that poachers had been spotted in action. He'd jump into a helicopter and dash off to film what he could find. What Davey *did* mind was dust. "High temperatures weren't a problem so much, and didn't really affect the camera's operation. It was dust that bothered us." As a result, Davey's assistant had to be very organized about cleaning the lenses. But the Aaton held up. "It's a tight fitting camera, and as long as you're not careless, you won't get a scratch on it." Davey wasn't and didn't.

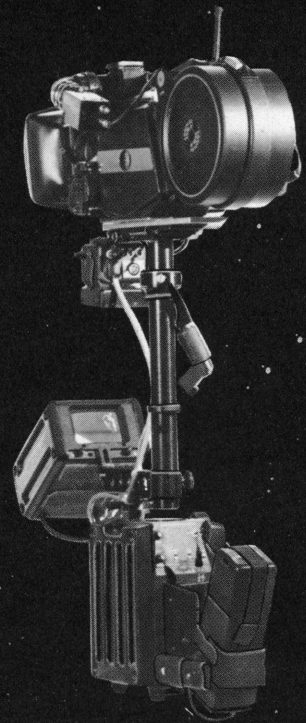
If he could do the shoot all over again, aside from ridding the area of such

threats as black mamba snakes or the possibility of being nipped by a scorpion or shot by a poacher, Davey can't think of too many changes he'd make. Cinematically, at least, he's convinced that despite the obstacles of the terrain, all went quite well. "Not that I'm completely satisfied," he adds, "because I'm never thoroughly satisfied with a film I've completed." But he is pleased with the results of *Rhino War*. "So much of the work was instinctive," he notes. "Fortunately, I had some insight as to what the problems would be, so I could work around them. That was a tremendous help."

Given the strict constraints of such a rugged terrain and untamed subject matter, it might seem hard for Davey to infuse *Rhino War* with his own philosophy of filmmaking. Perhaps his greatest contribution was an innate ability to recognize priorities: "you have to document what is going on and make your pictures as stimulating and interesting as possible," he explains. "But if you're shooting a dead poacher, and you've only got 10 minutes to work within, and the sun's going down and you have to get back before dark, you get out the camera, turn it on, and shoot the event." Davey trusted his judgment to make footage look as good as it could. Unlike a staged shoot, of course, there was no going back for a re-take. He assumed he'd need plenty of graduated color filters and neutral density graduated filters, and made sure he brought along a good supply, only to find them unnecessary. "I just shot as cleanly as possible," he reveals. "The climate and weather were so beautiful, we didn't have to make it any better." The sunrise and sunset colors he thought he'd need to enhance came across as some of the most stunning footage in the documentary, with no artificial help.

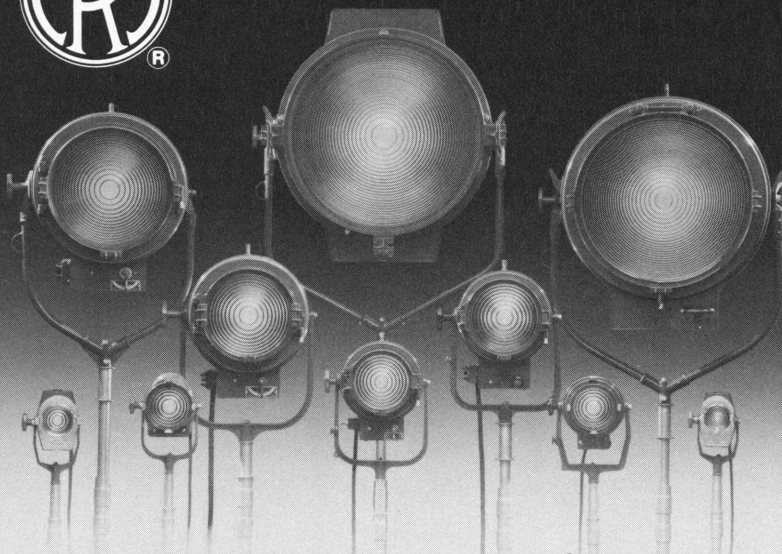
Can the instinct that played such a valuable role in Davey's work on *Rhino War* be learned, or is it simply inherent in certain lucky cameramen? Davey attributes some stylistic techniques to two of his favorite cameramen, Nestor Alemendros and Chris Menges. But his instinct is a direct correlation to the way his own eye travels. "You might be waiting for a train," he suggests, "and you'll be looking at someone's face, then at an ad, then at something going on down the corridor, in that progression. Making a documentary is a little like that; you're observing what's going on." His work on Wiseman's films have raised questions: "People want to know why I panned left

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here, or right there, why I went in for a close-up of a specific face. I don't know why. It just felt right."

Davey's innate visual sensibilities don't prevent him from studying and learning from his favorite cameramen. He recommends Alemendros' "A Man And His Camera" for every camera technician or assistant with cinematic aspirations. "I've never met the man," says Davey of his idol, "but I think his films are all fantastic. His approach to lighting is very natural, and I like his zest." Chris Menges, of *The Mission* fame, is another favorite. Davey considers himself fortunate to have been able to work second unit with Menges on *Bloody Kids* and *Fatherland*. "Chris has a very honest approach to shooting," says Davey, "his natural style enhances the beauty of his films." Davey favors the natural kind of lighting that absorbs viewers into the story without making the cinematography stand out by itself. "After I've seen a film, I ask people what they think of the photography. When they say they didn't notice it, that usually means it's good."

One of the most critical lessons Davey has learned is that no matter how significant his role in a project may be, "at the end of the day, it's not my film." In this case, *Rhino War* is Philip Cayford's film. "You can have a big impact, but you can't impose yourself too much. You have to know what you've got as it's happening. You can enhance scenes, and offer alternative ways of getting around a sequence by offering editors ideas." But Davey is confident when he relinquishes his footage, though not everything he shoots turns out as he envisioned it. In documentary making, that comes with the territory. "It's funny how things turn out," says Davey. "But that's what makes my work exciting. You never know what you've got till you get it back." △

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Photos by Don Smetzer

Biloxi Blues

A Memoir of World War II

by Ron Magid

Biloxi Blues is the second of Neil Simon's memory plays dealing with the playwright's early years prior to becoming the toast of Broadway. The sequel to "Brighton Beach Memoirs," which was made into a successful film last year, *Biloxi Blues* follows the exploits of Simon's fictional double, again played by Matthew Broderick, as he works his way through boot camp during World War II. The film combines the impressive talents of veteran

director Mike Nichols and cinematographer Bill Butler, ASC.

Butler's associations with such notable directors as Francis Ford Coppola, Steven Spielberg, Milos Forman and Sylvester Stallone on films as diverse and memorable as *The Conversation*, *Jaws*, *One Flew Over The Cuckoo's Nest* and *Rocky* insures that his images are treasured by film fans and professionals alike the world over. *Cuckoo's Nest* garnered an Academy

Produced by Ray Stark
Directed by Mike Nichols
Bill Butler, ASC, director of photography

Award nomination for Butler and Haskell Wexler, ASC, while his work for *Raid On Entebbe* and *A Streetcar Named Desire* won him coveted Emmy awards.

No less revered and honored is *Biloxi Blues*'s director, Mike Nichols, whose credits include *Who's Afraid Of Virginia Woolf?* and other irreverent classics such as *Catch-22*, *The Graduate* and *Silkwood*. Though his films have pleased audiences for two decades, Nichols'

name has yet to become a household word, a fact that puzzles Butler: "I don't think people realize what an impressive talent he is. I think he's an absolute genius, and he's one of the most enjoyable directors I've ever worked with. He has such a tender hand with his actors, and a sense of humor and timing that comes to him so naturally that to watch him work is an education in itself."

Aside from the obvious attraction of working with an artist of Nichols' stature, Butler was drawn to *Biloxi Blues* because of his love for the works of author Neil Simon. "Of Neil Simon's three plays based on the memories of his youth, I think *Biloxi Blues* is the best both as a play and a film. Of course the last film, *Broadway Bound*, hasn't been made, but the material in *Biloxi Blues* is the finest of all three and I knew that going in, so I was delighted to be able to work on it. I enjoy Neil Simon's work a lot, the way he turns a line and a phrase, and I loved hearing his dialogue coming out of the mouths of our cast: Matthew Broderick, Christopher Walken and Matthew Mulhern."

Because Simon's style is ironic and realistic, Butler decided to give *Biloxi Blues* a subtly comedic look rather than the overlit quality of a Mel Brooks parody. "We wanted audiences to really believe they were in an army camp, but I had to ride the line between fantasy and reality in order to let the audience know this isn't a snake pit," Butler explains. "We're not trying to show people the grimy, dirty, terrible thing that war is—it's not Vietnam. But Neil Simon is writing about his own experiences in training camp, about things that happened to him in a real and natural environment that a lot of people have experienced, so the real challenge was to create a look to pull off Neil Simon's ironic type of humor and still convince audiences that what's happening is believable and real."

"It was my choice to give the film a look you could enjoy, an easy-to-look-at appearance that lets what happens to the characters

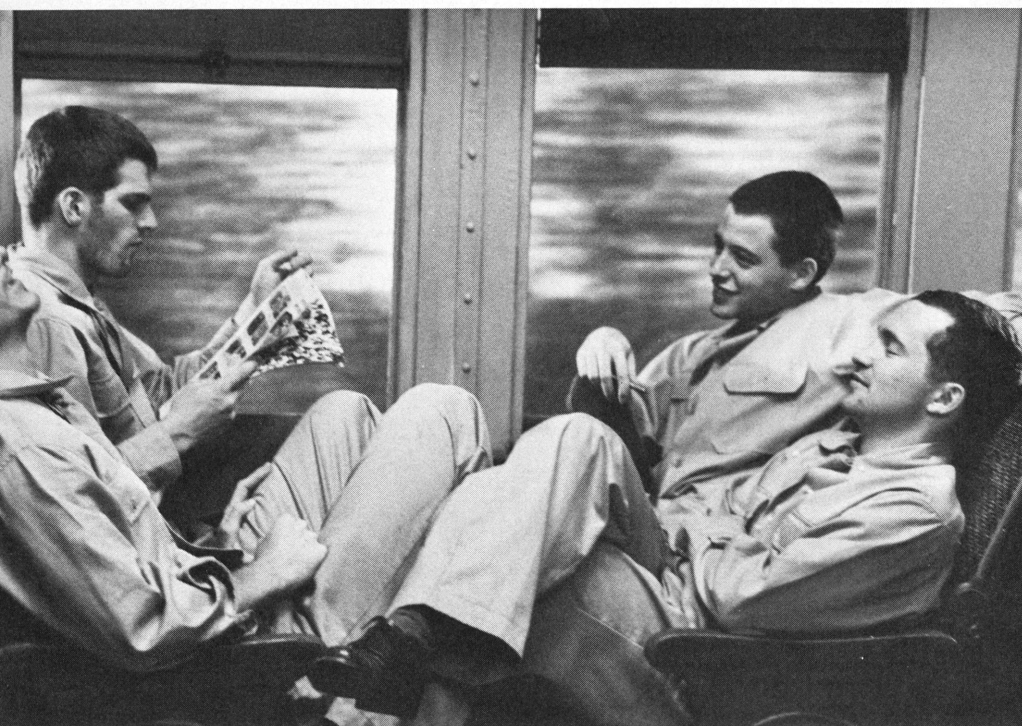


Opposite page: Walken and Broderick, sergeant and recruit. Above: Butler and crew prepare to shoot scene with the troops. Left: The dusty trail for both crew and cast.

make you laugh or cry. The look is tender, not tough. It's a caring look because I cared about the people, and I tried to respond the way I would have if I were really there and saw the things we tried to show."

In order to achieve as clear and fine a look as possible, Butler used the new Kodak 5295 stock for his interiors, while relying on the 5247 for his exteriors. "Most of the cameramen seem to have used the

new 95 stock for blue screen when they wanted a finer grain and they needed the speed," Butler observes, "but I found that I like the fine grain too, so why should I wait for a blue screen effect to benefit from it? The look of the film is very good and I saw no reason not to use it as a production stock, so I asked Kodak for a large batch of it and they were nice enough to supply it to me, though it's still hard to get. It's still not produced in large



Above: Scene on the train being photographed by method shown below, the camera rocking with motion from use of bungee cords.



enough quantities, but the probability is it'll replace 5294 whether Kodak wants it to happen or not. It served me very well and gave me good results."

Butler wanted *Biloxi Blues* to have a big, wide screen look, but didn't want to sacrifice his depth of field, so he chose to shoot the film in Super 35. "This isn't a film about one person, it's a military picture about World War II training, so we had depth of field problems everywhere because there were lots of people involved. The Super 35 format allows you to use ordinary lenses rather than anamorphic, which tend to cut down your F-stop and your speed, and the anamorphic format tends to mix up your lenses, making one lens look like another. The best solution I've found is Super 35, which allows you to go with ordinary lenses and to use the maximum amount of space on the negative, including the area normally allowed for the soundtrack – it goes edge to edge. It blows to 70mm very well and it can also be released in an anamorphic format.

"You must be very careful, however, in making the release print in terms of grain, because you do get into an extra step sometimes. The real problem with Super 35 is that you can't shoot it on a camera that hasn't been adjusted, because your center moves over. The center of ordinary 35mm stock is not the center of the film, it's shifted over because of the soundtrack, so when you're shooting Super 35, everything has to be shifted over to compensate."

The beginning and end sections of *Biloxi Blues* take place on a train going to and from the Army base where the film's central action occurs. At first, Nichols and Butler had toyed with the idea of using a real train, but then decided to shoot on a highly realistic mockup in order to get the maximum performance from the actors. "I determined that although a real train would have the real look of a train, naturally, it would be inconvenient," Butler says, "getting the work time in with our actors was

more important – the film's not about a train. There are numerous problems you run into when you try to shoot real trains on real tracks, not the least of which is the noise makes your sound go dead and you have to redub it all later. All of these factors brought me to the conclusion that we should build a set and make it appear to move by using rear screen projection."

The most difficult rear-projection shot of the entire sequence occurred when Matthew Broderick is first introduced: Butler's camera was required to appear to land on the window of the speeding train, focusing on Broderick. "We used the Louma crane in this situation," Butler relates. "We built the side of the train in a circle and placed the Louma crane at its center. We then spun the camera in the circular exterior train set. The Louma crane was perfect for this because as we turned the camera, we didn't turn around and see ourselves. Tied into our exterior train set was a partial interior set, so that we could have Broderick sitting at the window, and on the other side of that was a rear screen shot of the background running past. This would've been a very difficult shot to make for real, but this way we were able to whip the camera around fast enough to get all the blurring we wanted and still land accurately on Matthew at the window."

"The trick, of course, was landing on target, but that's always a problem. The other trick was to hide the rear screen projection, which is always difficult. When we screened our dailies afterwards, Mike said, 'It doesn't get any better than this!' Compliments like that from the director made me realize that the man really appreciated it when I got the shot right on the nose. The great enjoyment of doing what I do is working with someone like this who knows the difference, because most of the time you have to be your own judge of whether you're putting out good footage."

Perhaps the most difficult challenge of working on a static set that is supposed to appear to be moving is injecting just the right



*Crew works on scene featuring Penelope Ann Miller and Broderick in scene from **Biloxi Blues**. Below: Walken with Bill Butler on the job.*

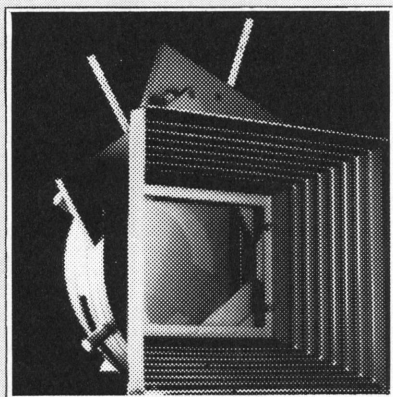


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quality of life into the scene to create the impression of movement. It was Mike Nichols who suggested that suspending the camera from a series of bungee cords would create the proper sway to convey the motion of a train. "This is especially significant," Butler laughs, "when you realize that this was not a small film, this was a film where I could afford to have anything I wanted. I had every modern convenience standing by, including Panaglide and a Louma crane! Here we are with all this high-tech equipment and the director recalls trying to recreate an irregular ride using bungee cords!

"The next morning, we had the rig built. Our New York crew was very good and they quickly produced this device that suspended the camera from bungee cords and gave us a very realistic look. We'd give it a little push and then the bungees would pull it back, and it's that action and reaction that produced the kind of movement you'd expect to see on a train that was rocking and rolling. I couldn't help but laugh that we had all the equipment you could name and the thing we liked best was so simple."

Simplicity remained the keynote of the production, for the most part, when things shifted from New York stages to a real military base near Fort Smith, Arkansas. For a parade sequence utilizing dozens of troops and several tanks, Butler used a symmetrical field to be able to flop the action in order to make continuous use of backlighting throughout the day, no small feat on such a large scale. "We're talking about a lot of people out on that parade ground, so when we wanted to turn the field around and reposition everybody, or move a tank back into position – well, they don't go quickly, and that's a lot of work for the production people. Everything we did was a big number on a film this size, and we needed lots and lots of people to keep that cooperation going so we could make the picture we wanted to make."

Much of the action of the Army base takes place in the bar-

racks of Fort Chaffee, which were virtually intact and unchanged from the day they were built at the height of World War II – except for one slight detail. "I've been in exactly the same situation we were filming," Butler recalls, "and my memories helped me to get it accurate. For example, when I first went into the barracks we were going to shoot in, it had an air conditioner running down the center, and it just so happens that I didn't remember any air conditioner running through any barracks I've ever seen, so they ripped the whole thing out. That's the only change we made in the barracks, but reaching for that kind of realism is important. Little things like that can really bug somebody in the theater who has similar memories of that period, so we tried to be accurate. Fortunately, the barracks we used were in very good condition – they'd been maintained – so it was an ideal place to shoot."

Using a real barracks created its own set of problems as well, Butler explains: "A barracks is basically a long tunnel, so it's exceptionally difficult to handle the lighting and to make the shots consistent all the way up and down the length of it. Naturally, I used the windows in the barracks to bring the light from the HMIs I set up outside in for my daylight lighting, while at night the natural lighting inside the barracks helped make it look right."

That is, when they shot the night shots at night. "Because of the production schedule and because it's cheaper to shoot day for night, for a great part of the filming we found ourselves shooting a night scene through the barracks windows," Butler says wryly. "The strange things you'll do on a film like this! We went all the way down to Arkansas to this natural location, a real barracks, and then we had to build an artificial night scene outside the windows! You talk about insanity in this business! Many's the day we shot night scenes in the daytime, and right outside the window we placed a photomural night scene of the bar-

"...when the light is not enough."

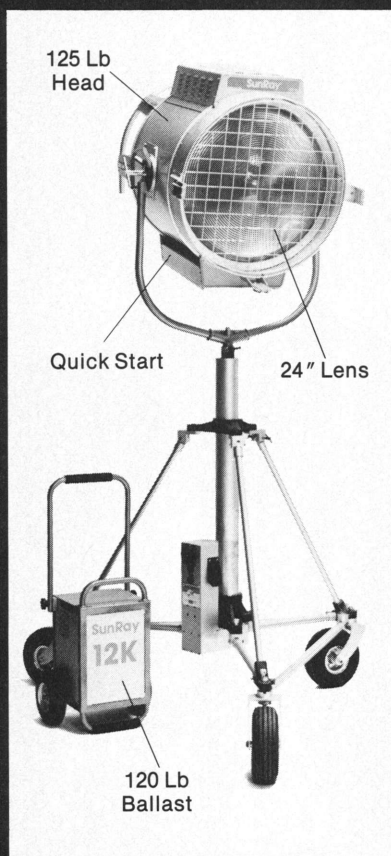


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racks next to the one we were shooting in. We cut the windows out in the photomural and placed lights behind them, and we placed it about ten feet away from the windows in our set."

There were times when Butler found that working on a real Army base could be a disadvantage, like when he tried to get a nice early morning shot of a bugler on a hillside blowing reveille. "I was looking for a place where I could put a bugler on a hillside, but the problem was getting a clean shot with no trees in the way. At last I found this huge area very high on a hill that was clean. There were no trees on it; someone had cleaned it bald and it was just nice meadows. I waited for sunrise, put my bugler up there nice and clean, and just as I was preparing to make my shot, here come some helicopters releasing paratroopers in groups of four or eight. All of a sudden, the sky was full of these little specks floating down and I realized that I was in the midst of a military drop, and of course, those guys were having a lot of fun with us.

"It was hilarious to be shooting a film about World War II and suddenly the sky's filled with paratroopers wearing modern maneuverable chutes. Naturally, we couldn't use them in our film because the period's wrong. A detail! I'd have loved to use it for real. Eventually, I got the shot by shooting between paratroop drops."

While scouting locations for an early morning march sequence, Butler discovered a stunning sunrise effect filtered through the steam coming off the marshes around Fort Chaffee that he knew he had to get in the film, even though he didn't have time to shoot it himself.

"This was not a shot that was originally supposed to be in the film," Butler admits, "but I realized we needed it, so I designed and set up the shot. The director had no idea what the hell I was doing, but he trusted me and so I set up our second unit to do it because we were supposed to be

shooting somewhere else that day. I sent a row of soldiers out there to march through the marsh scene that would cut together with the scenes I'd already shot, told the second unit director exactly where to have them march across and then we walked away because we were busy shooting the rest of the picture. The shot's absolutely gorgeous, and here's an instance where you're looking at a place you wouldn't want to set foot in because you know there's snakes in there, and yet these guys are made to march through this muck as part of their training! It's not a nice place, but it had a remarkable beauty, just as the smog in Los Angeles makes the nicest sunsets on earth."

Bill Butler sees much to admire in things that most of us take for granted, and it is the sole basis of his very fine art. "I see a lot of beauty in swamps and in the dust that rises off the road in this picture," he says enthusiastically. "Though these things may not be pleasant, they are things you remember. I've tried to reproduce those kind of memories, the memories that would've stuck in my mind if I were the trainee. I react to these things the same way whether it's a real situation or if I'm there photographing it, and I try to put it on film that way. I see a lot of beauty in little things that most people step over every day: a drop of water can be absolutely gorgeous but most people wonder whether they should call the plumber!

"The beauty we see as children no longer creates a response when you see the same thing over and over — your mind no longer records it. We get so wrapped up in what we do that we fail to allow our senses to enjoy being alive. How you react to what you see is what makes the difference between someone whose senses are dulled and someone who photographs with a good eye. This is the way I feel, and I try to apply it to what I do for a living: I must keep my senses sensitive to everything, and then know the trick of making it work on film." △

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Photos by Andrew Cooper

'Magic of the Silver Box' for *The Tracker*

by **Nora Lee**

Produced by Lance Hool
Directed by John Guillermin
George Tirl, director of photography

It was late afternoon and the sun was beginning to die in the west beyond the canyon walls just outside Santa Fe. The road from the highway to the location was much more suited to horses than the large vans that were transporting people to and from the site. It was dusty and quite cool in the fading light. Obviously, this would be the last shot of the day. The assistant director got everyone to settle and the director called for action. From across the floor of the canyon came the sound of hoofbeats. Riding at a good pace came a horseman, a cowboy, a hero. For an instant the legend of the American cowboy lived!

The reports of the death of the American Western seem to be greatly exaggerated. The genre obviously isn't as healthy as B horror films and teen sex comedies, but it simply refuses to give up the ghost and fade to black. *The Tracker*, HBO's current contribution, is based on a script producer Lance Hool has been developing for five years. In an interesting twist, the director of this slice of Americana is Britisher John Guillermin (*Waltz of the Toreadors*, *King Kong*, *King Kong Lives*, *Towering Inferno*) and the cinematographer is Czechoslovakian-born Texan George Tirl.

Kris Kristofferson stars as Noble Adams, a famous turn-of-the-century tracker nicknamed Nemesis. In the tradition of John Ford's *The Searchers*, *The Tracker* tells the tale of Adams and his son and how they come to an understanding about each other as they track two young women who have been kidnapped by a religious fanatic and his band of badmen.

John Ford was more than the inspiration for the content of the story. Guillermin and Tirl planned the film as an homage to Ford's kind of western. As Tirl told it, the "high concept" for the style of cinematography was "John Ford in color." He explained, "We accepted the storytelling language of John Ford. Every shot is well engineered. There is no 'too many notes, your majesty.' Only those necessary notes. That's John Ford – he's clean,

he's specific, there's no b.s. about it. That's what John [Guillermin] and I talked about when we talked about style. Every image is handmade. We really took care when we were scouting locations to think about each scene and how it fit into each specific locale. We wanted to melt the people into nature out of respect for that relationship between man and nature. We wanted to pay homage to the great American Western."

Tirl and company gleaned other lessons from Ford Westerns and tried to adapt them for this project. For example, according to Tirl, "Ford most likely wouldn't have used a zoom because it is a modern type movement. So when we zoomed in our film we tried to do it invisibly. These things are tools and every tool has to be used properly. You don't cut bread with a saw. You can get very 'newsreel'

with a zoom. But that really isn't the purpose. You can effectively hide the movement in a dolly shot. I think that's an intelligent use of the zoom," Tirl explained.

Tirl also intended to pay homage to nature in his compositions. He felt it was very important that the characters look as though they belonged to the land – not like they were just passing through. As Tirl put it, "They are there." He got lots of help creating this feeling from production designer Peter Wooley, costume designer Poppy Cannon – even from the choice of props. "Every prop fits," said Tirl. "It's not just a lent prop. It is something that a thousand hands have touched before and there is a beautiful patina on it."

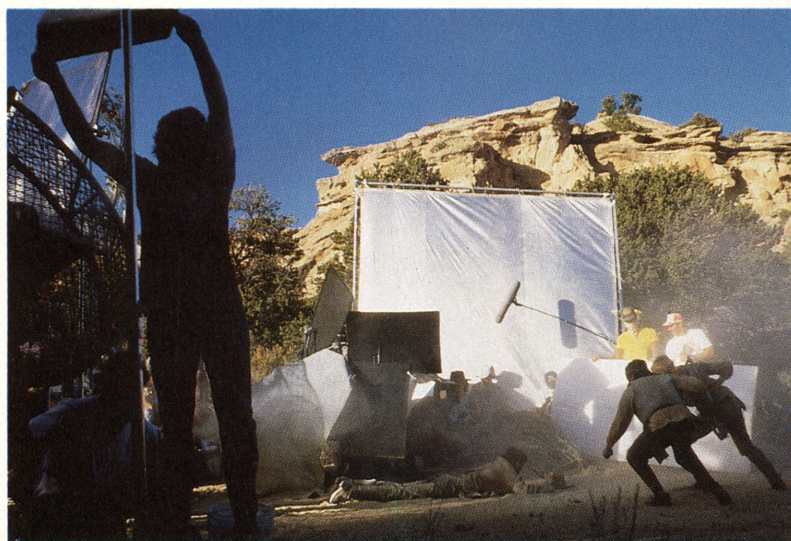
One question not easily answered for Tirl and the others was how John Ford would perceive color. According to Tirl, "We chose to push back the color – even in wardrobe, production and set design. Everything came from a very special and very beautiful muted color scale. I used a special filter combination that gives me a chocolaty look to this picture. It's not really sepia – it's about twelve-year old whiskey. So appropriate for a Western, it doesn't really affect the colors of the landscapes. The deep colors are all there. I think they are even more magical when seen



Opposite page: Don Swayze is a fleeing villain in *The Tracker*. Above and left: These two frame enlargements demonstrate the use of a special filter for enhancement. The scene above started on the ground with hoof prints, tilts up to the riders who are shown in second frame close-up.

Right: Use of reflectors for trail scene is evidenced as camera continues with sequence from previous page (59).

Below: Ritter fan and Fuller's earth combine to create ambience for wounded villain about to meet an uncomfortable fate at the hands of the figures on the right.



through my twelve-year-old whiskey.

"It takes a hell of a filter pack to mute Kodak colors and we are using both the 47 and 94. Kodak is a very genuine, very stable film stock. If you want a look that is different, if you want to depart from that, it takes a lot of nerve."

John Ford's final lesson concerned parsimony. "You know,

as a director, John Ford was saving the ammunition. He used the close-up for really important scenes because it is so strong. Everything has a certain dramatic line, even the photography. You cannot start to scream in the beginning – then you have nowhere to go. So we, too, are saving the ammunition for the real conflict, for the scenes at the end of the film when Noble and his

son come to terms."

All George Tirl's choices – film stock, camera, filtration, lights, lenses – contribute to what eventually happens on the big screen or the small one. Sometimes compromises must be made. "In the very beginning the director and I promised each other to use prime lenses. We started that way, but soon it was faster to use a zoom as a primary lens. We did tests and we found that the Panavision zoom is a terrific sort of set of prime lenses. We worked with that and all the sizes between. But we used prime lenses in the interiors."

Tirl is truly captivated by light and the properties of light. "I consider mother nature the best gaffer," he said, explaining his views. "I always look around and see how Mother Nature would light the scene and then I use the minimum light to just duplicate the look. Yes, Mother Nature is the best gaffer, but she doesn't use any kickers. So sometimes she is terribly lousy looking, too. She can sometimes use a little help."

Sometimes all she needs is a little understanding. Tirl continued, "Light is something so simply complicated – it makes me humble. You see, I have a theory of dirty light. Daylight is dirty light – all light is dirty light. When I put a film lamp directly or indirectly on a face, I will get clean light. But in life, what makes the light so rich is its multiple reflections – off walls, floors, faces, dust in the air – it's dirty light.

"I like to light through windows and have as little as possible in the room. Just a fill and the necessary effect lights. I hate to have too much light inside. I have even developed a special technique for lighting through neutral density filters from outside the window so that the windows don't burn out. I angle the gel and light on the side so that the gels don't steal all my light.

"Sunlight, too, is dirty. It bounces off the forest, the sky, the sand, the facades of a house and becomes dirty. The mixture – the absolutely matchless mixture – is what comes into a room. To simulate this light when we are working outside, we color our bounce reflectors. We bounce colored light on the reflectors to get it a little richer."

There are times when Mother Nature gets it right and Tirl is not afraid to go with natural lighting. He estimated his ratio of using natural light to artificial light on this film was about 70:30. "Thirty percent of the time you have to help. Consider the technical problems with wearing hats, for instance. The contrast ratio of film is much lower than the human eye and the television is even worse. So, considering that you have a range of two stops on television and it's gone, we have to help. It's especially hard on medium close-ups."

"But," he cautioned, "at the same time, the hat shadow is there – don't get rid of it. Just level it out. You bring it up so the eyes are still there. Then the TV is happy."

There were other interesting challenges for Tirl and company on this project. Tirl and his operator Paul Babin have similar feelings about horses. Said Babin, "They



Above: David Huddleston and Kris Kristofferson rest at night campsite, an interior set in a warehouse in Santa Fe. Below left: Crew at work. From left, Huddleston, Kristofferson, Bob Stradling in checkered shirt, boom man Gary Theard, B camera operator Paul Babin, Tirl at the A camera and Guillermin at far right. Prop girl Summer Eubanks shivers in foreground.

can be a real pain. They don't stay in the same place. They don't hit their marks. And when you're shooting for two different aspect ratios – TV and European theatrical – and trying to keep the frame as filled with human beings as possible, the horses don't always cooperate."

It was Babin's first assignment with horses, but Tirl has filmed many period pieces in Europe – all with horses. He has had to make his peace with the

beasts. "We corrected my problem with horses in an Irish bar in Dublin," Tirl recalled. "There was an animal psychologist working on a film I was shooting. He took me to the bar and he said, 'George, you have a problem with horses.' And I did. Every time they had to run past my camera, they would do something wrong. They would shy away – something. This animal psychologist told me, 'George, you're afraid of horses. You can't let the horse know.' He was right. I

From top: Villains John Quaid, Geoffrey Blake and Scott Wilson backing out of saloon after murder is done. Center: Wilson and Huddleston in confrontation surrounded by beautiful Rocky Mountain autumn. Below: Kristofferson lowers the boom on villain Leon Rippey.



was afraid. So I just start sending macho vibrations – and the problem disappeared.”

Tirl and Babin had to be constantly aware of their compositions since HBO wanted to release *The Tracker* in Europe as a theatrical film and run it on their cable network in the USA. As Babin explained it, “We were constantly having to think about what’s going to read on television and what’s going to read on the big screen in Europe. The European aspect ratio is 1.66:1 and the TV is approximately 1.33:1. So what we’ve had to do is make the top of theatrical coincide with the top of TV so that when we do a head shot, they’ll both look pretty good. It’s the landscapes that sometimes must be compromised.

“For example, one morning we had a wide shot of the house and grounds and the little girl feeding geese. The geese were very low in the frame. They will play very nicely on television, but in European theatrical release, you’re just going to see the tops of their heads. When we have to incorporate landscapes and actors, we have to strive for a happy medium. It’s something that is on my mind at all times. It means that I am much more aware of things that are changing in the frame – like horses or actors that occasionally miss marks.”

The Tracker is filled with a variety of stunts and special shots, and everything was photographed by the first unit. One effect that Tirl thinks was particularly good was his version of a West Texas sand storm. “We used huge Ritter fans to create a really good-looking sand storm. It’s an interesting piece of art because it really behaves like a sand storm. It lifts and swirls around – it doesn’t just blow through the frame. To get it to burble up like that we blew several fans against each other.”

Trying to photograph it was a different problem. “We took the exposure reading before the sand storm and it was one-and-a-half stops lower than a reading taken during the sand storm. And as the sand blows through, at times



Above: Karen Kopins and Mark Moses, the love interest. Below: The kidnap victims, Jennifer Snyder and Celia Xavier.

the exposure increases. I tackled it by splitting the difference between the readings and shooting in the middle."

There were, of course, complicating factors. "When I went for the faces with the lower exposure, then the sand and Fuller's earth looked more like fire smoke. The color was wrong. That's when my 12-year-old whiskey filter pack helped me out. It tended to keep the Fuller's earth from looking too gassy....When we were doing this scene I was thinking of Akira Kurosawa and his storm in *Dersu Uzala*," admitted Tirl. "Of course, he is an absolute master – my favorite director."

Another interesting stunt was covered from a low-flying helicopter. Said Tirl, "We had horses going at full gallop with a transfer between them. The scene takes place when the girl is being kidnapped. One of the stuntmen pulls the girl off his partner's horse and onto his – all at a full gallop."

Tirl has a daring point of view on stunts. His basic approach



is "No guts, no glory." He commented, "Stunt shots are generally fast-moving and I've learned that there are times you can get away with murder. If there is a strong resemblance – thanks to make-up and wardrobe – then psychologically you can even get away with a close-up. It helps to have a little

dust and movement, of course, and the stuntmen can help by not looking straight at the camera. I try and avoid direct light. I think I can judge pretty well how recognizable the stuntman will be...A lot of people are afraid of giving the stunt away so they shoot from the back. But every time I see a stunt shot that way – I immediately think stunt shot."

The Tracker was shot on location in Colorado and New Mexico. It is a very beautiful and varied landscape with a degree of unpredictability – especially during the fall. Tirl's overall efforts to unify the look of the picture were often challenged by the perversity of nature. "There are ways to address this problem. In *The Tracker* I have used low contrast filters on sunny days to bring down the contrast and then if we are surprised by the weather or have a continuity problem, we have a chance to do something with it – a little bit of latitude.

"If, however, you have very contrasty scenes followed by no contrast in the following scenes,



Top: Stunt doubles and horses in peril as villains are pounced upon by marauders. The sand and Fuller's earth flies as rider is shot from his horse. Below: Tirl at the lens.



then you have a bigger problem. You cannot add to contrast. You can over-expose the cloudy day scene and print it down and increase the contrast, but it's kind of artificial. Printing down an over-exposed negative brings the contrast up! There were a couple of scenes I had to light with artificial light and then match it to a sunny day. It is a challenge, because the background isn't lit in the same way.

"Matching is really a problem on a low budget or medium budget film. It's become a specialty of low and medium budget directors of photography. I am very proud of one aspect of my career. I have shot many low budget films and found that it is in the director of photography's power to make that picture look bigger than the budget or the circumstances might have allowed."

Tirl's career in cinematography reflects the many facets of this animated and articulate man. His love affair with the cinema began early. He clearly remembers spending many afternoons with his grandfather watching movies in Prague, Czechoslovakia. "Many of them were Russian films, but even bad films were magical," Tirl recalled. Once, at the age of about thirteen, he was making his way home from school when he noticed considerable commotion on the street. His investigation revealed a man hunched over a silver box. Even then he knew that that silver box was the where the magic lived. He decided that he, too, wanted to become a cameraman – the master of the silver box.

Shortly after his first experience with a film crew, he convinced the teachers at the Czech film school to let him sit in on the classes. Simultaneously, he became the youngest camera assistant in the country. Later, when some 600 youths applied for admission to the film school, George Tirl was one of ten chosen. His old teachers recognized him and welcomed him.

Then in the late '60s, when the USSR "liberated" Czechoslovakia, Tirl emigrated to Sweden. He chose Sweden because



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he had had a roommate in film school from there. The boy had spent much of his time homesick and had carefully described all the wonders of Sweden to a receptive Tirl. In Sweden, Tirl decided to try and continue his film education and he applied to the Swedish film school. Again, he was accepted.

It was here that Tirl met a man who would be one of the greatest influences on his work, Göran Strindberg, grandson of August Strindberg and Sweden's foremost teacher of film. Tirl lived and worked in Sweden until 1980 when he decided once again to emigrate. He had heard about Dallas, Texas and its dream of becoming "the Third Coast"; and its new studio. He had relatives there who would make the transition easier — so he left his comfortable niche in Sweden for the wild and woolly west. "I left Sweden because I wanted the competition and challenge available here. That is what makes you better," said Tirl, quite simply.

It is clear George Tirl sees himself as an artist and the camera as his favorite brush. "I don't have as many creative tools as a painter has. I can manipulate the image, but a painter can paint with fantasy. I use a camera and a painter uses a pencil. A pencil is a more direct extension of the painter's imagination. I have to paint with photography. It slows me down one degree." △

Things to Come . . .

Upcoming issues of *American Cinematographer* will contain in-depth stories on *Outer Heat*, *Hot to Trot*, *Willow*, *Who Framed Roger, the Rabbit?*, *Married to the Mob*, *Vibes* and many more. In April's issue we will feature *Rikki and Pete*, an Aussie movie made in the desert down under by David Parker and his wife, Nadia Tass. Their adventures and un-Hollywood kind of filmmaking will make for interesting reading, we think.



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Judith Ivey at left and Jennifer Jones with rifle. Eric Stoltz is barely visible at right.

Gothic Horror Revived With *Sister, Sister*

by Mark Daniel Schiller

Hollywood returns to the Gothic tradition with New World Pictures' *Sister, Sister*. Set in the bayou country of Louisiana, *Sister, Sister* reminds us of the great southern fiction of Flannery O'Connor and Carson McCullers. Director and co-writer Bill Condon has fashioned a mystical world in which it is difficult to define what is real and what is illusion.

Alone in an antebellum plantation house that has been kept

in their family for generations, two sisters (Jennifer Jason Leigh and Judith Ivey) run a bed-and-breakfast inn. When an attractive young man (Eric Stoltz) arrives for the weekend, what we presume to be reality begins to crumble and the weight of a mysterious and dangerous past begins to surface. *Sister, Sister* is a textured film in which layers are slowly peeled away to reveal a world in which reality becomes transformed, and good can be evil.

Produced by Walter Coblenz
Directed by Bill Condon
Photographed by Steve Katz

Director of Photography Stephen Katz (*Night, Mother, The Blues Brothers*) approached *Sister, Sister* as a romantic thriller that maintained a Gothic feel. "I didn't want to go over the edge visually," Katz explained. "I liked a look that was both mysterious and romantic, yet I was always conscious of blending these styles with what is basically a realistic approach."

In presenting a world of altered realities, Katz and director Condon designed a look which



Above: Leigh and Stoltz in empty ball-room of the mansion.
Right: Plantation veranda.



Condon describes as "Eudora Welty filtered through Alfred Hitchcock." Suspense unfolds as Lucy Bonnard (Jason Leigh) is immediately drawn to a new arrival at the inn. The guest, Matt Rutledge (Stoltz), is a handsome young man whom Lucy sees as the knight in shining armor who has come to take her away from the confines of the decaying plantation. Yet for her older sister Charlotte (Ivey), Rutledge is seen as a threat from the external world.

The southern locations of wooded swamplands and deep bayous lend the film a rich texture. It is an atmosphere which Katz describes as "timeless." The bayou region in southern Louisiana maintains a strong Cajun culture which evokes a mysterious and mystical feeling with its thick brooding forests in the swamp. "You get the feeling that the bayou is closing in on the aging plantations and that the green lawns are slowly being overtaken by the swamp," Katz

states.

The Bonnard sisters home is the primary location for the picture. Exteriors were shot at the Greenwood Plantation in St. Francisville, Louisiana, while the interiors were done in the Madewood Plantation House on Bayou Lafourche in Thibodaux, Louisiana. The Madewood house presented Katz and Condon with a variety of rooms and halls in which to stage the drama. Much to the filmmakers' liking, the house was constructed in a forced perspective with door and window frames three to four inches narrower at the top than at the bottom. Walls and ceilings seem bolder and more striking. Katz praised the house as a perfect place to shoot in. "For this type of film I liked forced perspectives," Katz maintained. "We went for triangles and interesting geometric compositions. I must admit that when I first saw the house I was worried that everything was extremely vertical rather than horizontal. But then when I saw the compositions through the lens, I was impressed with how the compositions were nicely stretched across the frame. The architecture of the house became a fantastic location in which to place the actors. The large staircases and rooms gave wonderful compositions."

Katz utilized the high ceilings and expansive rooms by placing most of the lights very high with pole-cats, and often shooting down from above, a la Hitchcock. "We used a Tulip crane in the house. It was great for certain shots in the huge empty rooms. One of my favorite shots in the film is from above a huge chandelier looking down at the characters in the empty ballroom."

"I was lucky on this film in that I had a very long prep time. I had a full eight weeks," Katz states. "We went down to Louisiana with a storyboard artist and did the storyboards after blocking the scenes in all the actual locations." The extended prep time allowed Katz to shoot numerous tests prior to the start of principal photography. Katz's main concern was getting

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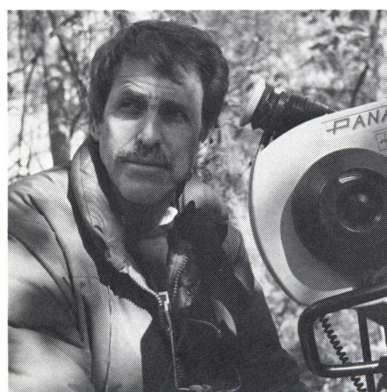
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Above: Benjamin Mouton stands in the swamp. Right: Stoltz and Mouton with Condon and Katz at the camera. Below: Steve Katz working in the swamp.



the correct filtration so that one scene would blend properly into the next. "I am a big fan of Hank Harrison filters," Katz maintains. "My relationship with Harrison started in 1974 when I was shooting tests with Geoffrey Unsworth on *Lucky Lady*. For *Sister, Sister*, Harrison made me a set of sepia filters with a little bit of chocolate in them. They were absolutely wonderful. We did a full sepia treatment on the film as well. Harrison also made up a day-for-night filter for the exteriors which removed all of the color and

gave the film a beautiful lavender quality. I also overexposed for nights and brought it down in the timing. This really washes out the colors. It was kind of funny because when I saw the footage from the lab (Deluxe Lab in Hollywood), they had put all of the color back in by mistake so we had to work that out."

A week before shooting began in Louisiana, approval was granted by the producers and the studio to shoot the picture in Super 35. "Billy Condon always wanted to do an anamorphic picture," Katz maintains. "I thought it was great that he was able to do it on his first film as a director." Because Super 35 is a wide screen process that uses the soundtrack area on the film stock and does not require anamorphic lenses, Katz and Condon were confident working with the Zeiss lenses in the rugged and humid conditions. Katz ended up calling cinematographer Jeff Kimball who shot *Top Gun* in Super 35 to get advice on a center ground glass which Kimball had made for the film.

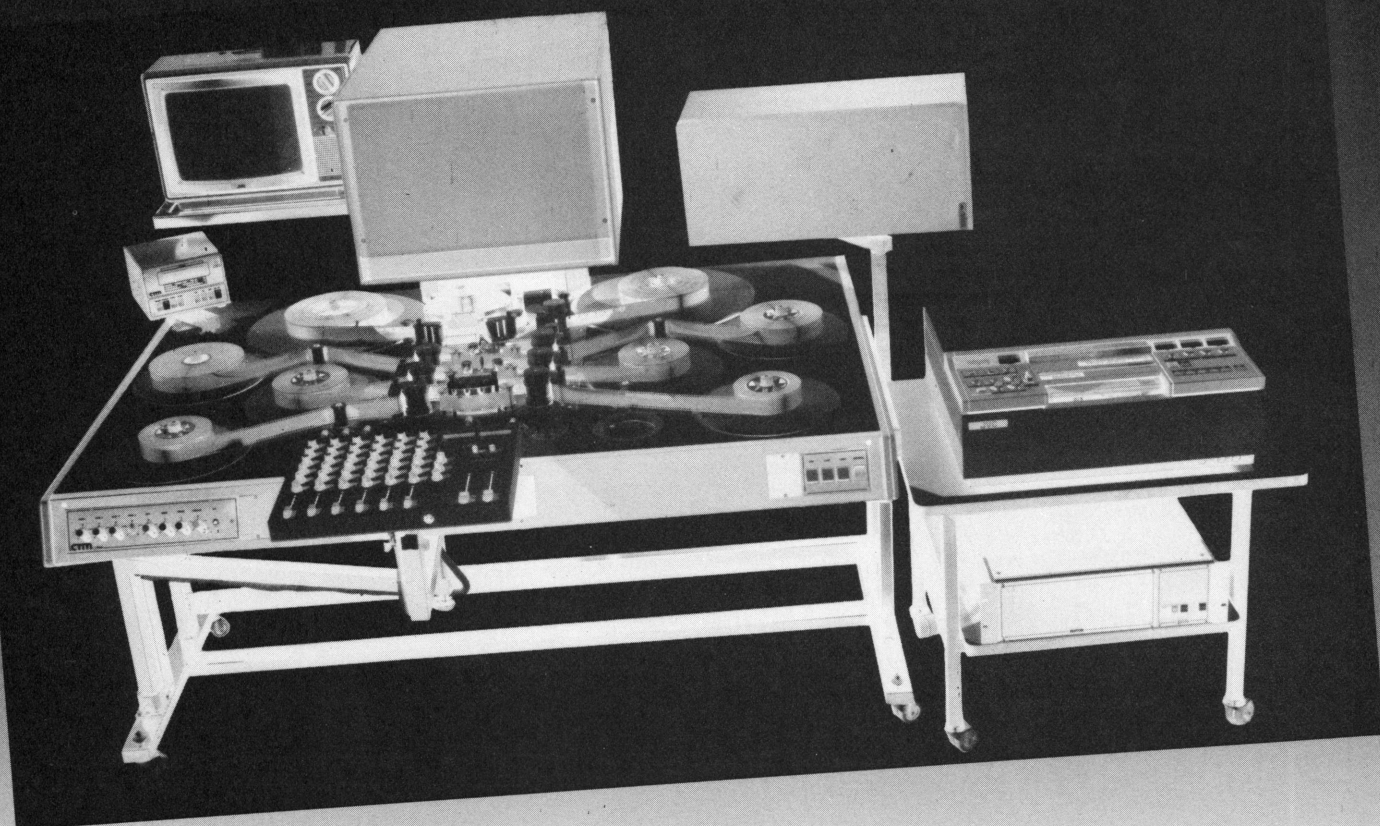
"On location we did a lot of tests with the Zeiss lenses. During those tests I decided that I would rate the '95 stock at 640 ASA. In the daylight we shot at 15 foot candles at a 2.8 stop. At night we would shoot at 5 to 6 foot candles. I rated the '97 very conservatively at 250 ASA and the 5247 for exterior daylight at 120 ASA."

Katz came away very happy with the results of the processing. "I must say that the timing on this picture was the least painful of all of my films. There was surprisingly no problem keeping a consistency throughout the film."

Another of Katz's concerns was his use of smoke and fog throughout the picture. "I like to use a lot of smoke," Katz said, "but with the Harrison filters it doesn't look obvious at all. I prefer to use a very white mineral smoke called Cracker Barrel which looks great with the Harrison filters." Katz cites a wedding sequence and the opening of the film in which the camera moves past rows of burning candles to find a young couple

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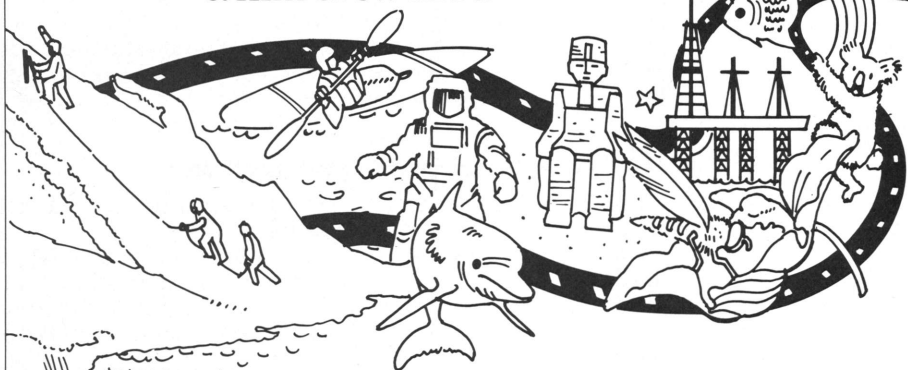
making love, as two scenes which were shot in deep fog without the smoke reading heavily on the screen. In most of the interiors Katz used double fog filters and single fogs for the exteriors but he made sure to go a little lighter on the smoke when the double fog filter was being used. Once in a while he used a Mitchell diffusion.

To accentuate the suspense and drama, Katz took great care in lighting the shadows. "I like a look which is very mysterious yet has that silky quality to it. The shadows in *Sister, Sister* are very dark. At the same time I want to see what was in these shadows. The key lights are very soft but with hard kicks. It was important that on every new magazine we shoot a grey scale." Katz's intent in lighting the film was to shoot it in such a way that it starts extremely contrasty and real, and then as the story progresses and the boundaries between reality and illusion become less defined, a romantic golden brown haze begins to take the contrast out of the images.

While the interiors on *Sister, Sister* proved to be relatively painless, the exteriors were much the opposite. "First off," Katz stresses, "the conditions were dreadful. We built a freshwater pool in the actual swamp to try to control the elements but it was still horrible. The production company set off charges all the time to rid the area of snakes, and I must say that this wasn't a very comforting sign." To make things worse, the company was faced many times with having to shoot in the real rain. An extended night sequence in which a ghost appears was intended at first to be shot on a sound stage in Los Angeles. Once in Louisiana, the company decided to shoot the sequence on an actual location in the swamp. Shooting in the bayou at night became physically taxing for Katz and crew.

For the ghost sequence, Katz rigged long armed Condor lifts with HMI's to create moonlight in a break through the clouds. The scene was also lit with a strong

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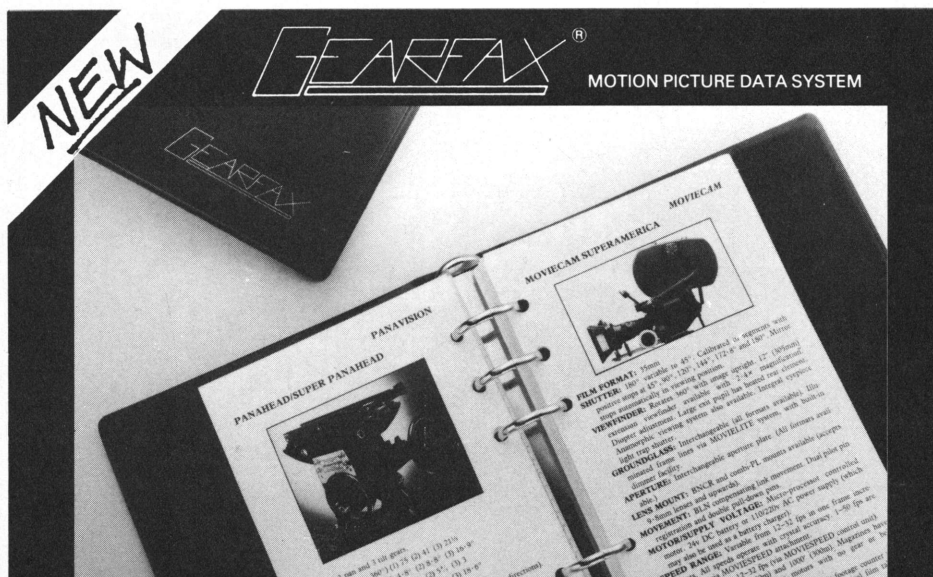
backlight. "What happened was that the real moon decided to peek through that night and the real moonlight ended up being quite bright. We ended up with two moons," Katz says with a laugh. "It became a big joke around the set that Billy and I were shooting a film with two moons."

Sister, Sister was a film that allowed Katz to do a lot of experimenting. Beyond being given the time to shoot numerous tests on the actual locations, Katz was happy that he was able to use a variety of lenses. Rather than settling on a specific range of focal lengths for the picture, he was able to mix things up. He and Condon became fond of lenses that were 85mm and above as well as a wide angle lens of 14mm. They decided that the large rooms in the house were best photographed with a 14mm or a 25mm which stretched the room across the frame.

Even though *Sister, Sister* is a film with two moons, Katz speaks proudly about the look of the film. "The bayou is truly an amazing place to shoot. It lends to the film an atmosphere that when captured on film seems very calm and serene in one sense, and yet has this deep moody feeling of evil just under the surface. The challenge is to create an interesting balance between these two tones. Billy is a real film historian. We looked at hundreds of films before we started shooting. We always went back to the films of Welles and Hitchcock. They are films which I love, so I was very eager to use them as my references." △

Things to Come . . .

In our April issue there will appear the second in our *Reflections* series, which will be an interview with Steven Poster, ASC, about the use of light in the making of a scene from *Someone To Watch Over Me*.



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High Wire Stunts for *Shoot to Kill*

by Robin Brunet

Shoot to Kill, Roger Spottiswoode's new feature starring Sidney Poitier and Tom Berenger, derives most of its excitement from the efforts of big city cop Gordon Stanton (Poitier) and reclusive mountain man Jonathan Knox (Berenger) to track a desperate killer through the rugged terrain of northern Washington state.

Made at various Vancouver locations, staging and filming the picture's big action sequences tested the ingenuity of veteran special effects coordinator John Thomas (*The Boy Who Could Fly*, *Runaway*). Thomas, who created many invisible effects and stunt gags for John Badham's *Stakeout* several months prior to *Shoot To Kill*, said of the latter's mountaineering sequences:

"The locations were extremely dangerous and difficult to shoot in, but we managed to create gags that to my knowledge have never been done before, such as dropping a stuntman down a 200-foot gorge on a double-descender system. If I hadn't been working with a top-notch team of filmmakers - Director of photography Michael Chapman, second unit director Fred Waugh, second unit cinematographer Curt Petersen, and Roger (Spottiswoode) who really believed in what we were all doing - I don't think the film could have been made."

The gorge Thomas refers to is located in Quintet Tunnels Park in Hope, B.C., and is traversed in the movie by Berenger's character, who climbs across a cable in order to free a jammed trolley car hanging on the other side.

As he is poised over the centre of the gorge, the trolley suddenly breaks loose and rushes down the cable towards him, secured only by a rope fed out by Poitier standing at the edge of the gorge. The Berenger character is dislodged and drops 150 feet until the rope snaps taut and swings him past

the gorge face.

Filming of the trolley car sequence took ten days in the Spring of 1987, and required 40 loads of equipment to be helicoptered to the location. Once a base camp had been established, Thomas was faced with the monumental task of securing 13 cables

Fred Waugh shoots down at stuntman David Jacox. Waugh is strapped to 'Fred-die Chair.'



Photos by Tim Spencer and John Thomas



Above: The scaffolding along the face of the cliff. Right: The jib arm.



across the gorge in cold, rainy weather.

"Besides the trolley cable and a 'picture' cable Roger wanted for visual interest, we needed support cables and cables for camera trolleys," he says. "They were all set up in close relation to one another, and the action had to be shot in such a way that the audience would only see the trolley and picture cables. To facilitate Michael Chapman and Curt Petersen's job, we had to dismantle the entire set-up about

five times, as quickly as possible because the gorge was so deep only several hours of shooting light was available to us."

Because park officials insisted the shooting site be left in pristine condition, Thomas used Chem-Set insert bolts to anchor his winches and jib arms to the rock. The first cable was established by pulling it across the gorge with a $\frac{1}{4}$ inch nylon line, and nearby trees were spur-climbed by Thomas's crew and clamped with rubber-lined metal rings from which endless winching systems were installed to raise and lower cables at will.

"A cable across any gorge has deflection off 'true straight' due to cable length and weight attached to it," Thomas explains. "In this gorge the cable deflected about three to four feet. When we put two cars on one cable—the trolley and camera car, for example—we had to be able to raise and lower the cable quickly in order to maintain the same visual perspective. Our systems are built so you can raise and lower the main cable very easily, as opposed to using a turnbuckle system. You can put two cars on, then go ahead and shoot."

Before the systems were built, Thomas calculated each cable's catenary curve: an engineering term for the amount of tension put on a cable when weighted. With 1000 pounds traveling on some lines for *Shoot to Kill*, Thomas used cable diameters no smaller than $\frac{3}{4}$ " to achieve the 10 to 1 safety ratio he seeks on all film shoots.

Thomas installed a basket elevator system on one cable so that Chapman could diagonally shoot, dolly, or establish fixed angles either above or below the picture cable.

The Berenger character's fall from the trolley cable was made possible by Thomas's unique refinement of the descender rig, an apparatus originally developed by British effects man Bob Harmon, Dave Vickers, and stuntman Vic Armstrong. A

pre-measured wire attached to a harness worn by a stuntman is would around a housed, cone-shaped spool, the end of which sports a windmill-like fan and a handbrake. When the stuntman makes his jump, the wire plays out, and as it reaches the thin part of the spool, the spool's revolutions increase, increasing the drag of the spinning fan which in turn decelerates the falling stuntman. Instead of relying chiefly upon handbrake, the cone shape of the spool along with gravity breaks the stuntman's fall.

The descender rigs used on *Shoot To Kill* could achieve 90% free fall, but the nature of the Berenger character's fall called for the shot to be achieved in a number of unusual ways.

For the first part of the fall, prior to the picture rope drawing taut and swinging the Berenger character into the gorge face, Thomas dropped stuntman David Jacox 150 feet from a $\frac{1}{8}$ " descender cable threaded through a jib arm. This jib arm was designed and built by Thomas and truss engineer Don Moulson to be dismantled into three 12-foot sections and could be extended to 36 feet above the cliff ledge. The beauty in the jib arm's design lay in the speed with which it could be dismantled and reassembled despite its 1200 pound weight: a mere 20 minutes to take apart.

To prevent Jacox from getting tangled up in the picture rope on his way down, Thomas hooked the rope to another descender and a 60-pound counterweight and dropped it simultaneously. Captured by Curt Petersen's lens in medium long shot, the rope's plunge wasn't apparent; the descender cable itself was rendered virtually invisible by painting it to match the wall of the gorge.

"*Shoot to Kill* was photographed in Super Techniscope, and the wide format made it really difficult to conceal things," says Petersen. "Frequently it was a matter of John swinging me a

foot to the right or left on the camera car to avoid getting the edge of a cable or a jib arm. With one-and-a-half hours of shooting light available each day in the gorge, hiding the descender cable took a lot of patience, since it was visible whenever the sun hit it the wrong way.:

It often took Petersen, an award-winning photographer and producer, three hours just to get his cameras positioned correctly, and weather conditions were so poor that half a week would go by without the second unit being able to shoot anything. When David Jacox performed his descender stunts (six in all), Petersen undercranked his Ariflex cameras 22 frames per second to give the required 10% bonus to the 90% free falls.

The second part of the fall consisted of the picture rope drawing taut and swinging the Berenger character into the gorge face. To achieve this piece of action, Thomas threaded a cable through the inside of the picture rope, attached one end to a crane positioned on top of the gorge and the other end to Jacox standing in the bottom of the gorge. A descender cable threaded through a shiv on the bottom of the trolley car positioned midway over the gorge was held by Jacox.

"We pulled him up on the picture rope 60-80 feet, then we side-pulled him over to the trolley car," says Thomas. "The cameras rolled, he released the side-pull cable, dropped 60 feet and swung towards the gorge wall, grazed it two or three times then safely hit it."

Second unit director Fred Waugh describes how he prepared Jacox for this dangerous stunt:

"We prepared him for the swing gradually, dropping him first from a height of 10 feet, then 20 feet, then 30 feet and so on. The fall really started to jolt him at 40 feet. You'd figure a fall like that from 60 feet would tear a man in half, but David had the cushioning of the big cable and a



Second unit crew and the camera trolley.

secondary cushion from the swing provided by the picture rope.

"The stunt made everybody take notice: when he fell to the end of the cable the picture rope whipped him underneath so violently nobody could believe it!"

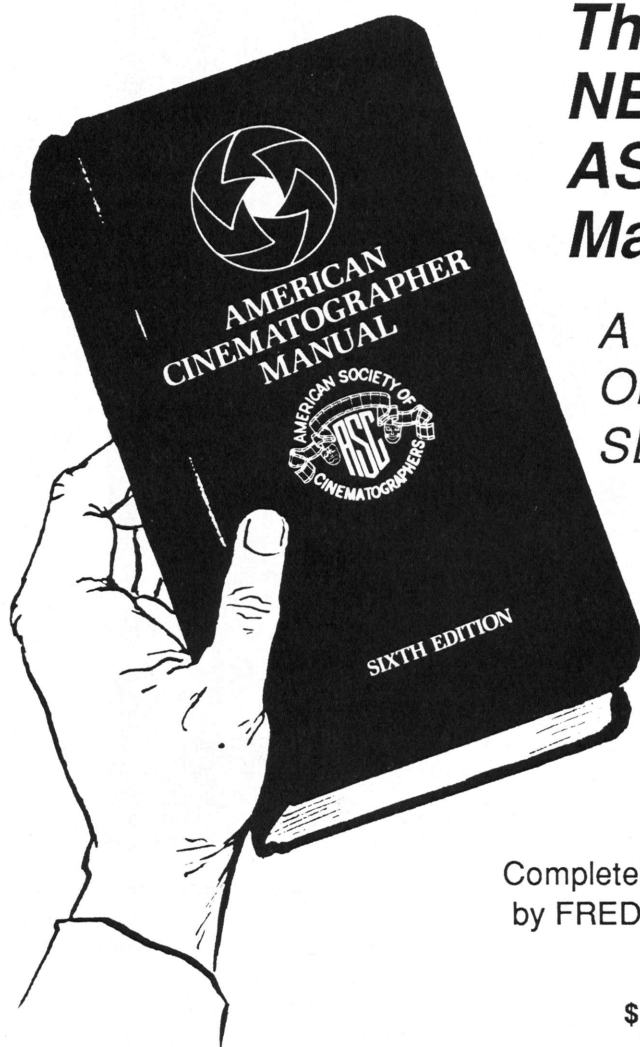
Waugh, who began his movie career as a stuntman 35 years ago from a circus acrobat background, rode the descender three times to capture POV shots. The experience was hardly novel – he'd worked with Thomas and the descenders for *Captive Hearts* in Vancouver and a television commercial for Walt Disney World in Florida. But nothing could have prepared him for the "Freddie Chair," a metal seat attached to a cable system that could swing backward or forward according to the way Waugh shifted his own body weight. The chair was used for a POV shot

representing Berenger's fall of the cable.

"Essentially I was strapped into the chair 200 feet above the gorge floor, and I had to put the camera to my eye, swing slightly back then throw myself completely forward and down," recalls Waugh with a grin. "It was wild! When they winched me out to the center of the gorge, I thought to myself, 'I'm 55 years old, what the hell am I doing?' At first I just couldn't throw myself forward without hesitating, and blew the first take! Then I managed to control myself enough to get the shot."

Midway through *Shoot to Kill*, a group of fishermen are sent plummeting off a ledge, courtesy of Clancy Brown's murderous character. While the brief sequence could have been accomplished with the use of articulated dummies, Spottiswoode allowed Thomas and the second

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unit personnel to shoot the sequence the way they saw fit.

Once again Thomas' descender rigs came into play, this time on a ledge in Whistler, B.C. A 160-foot tall scaffolding with three 20' by 10' platforms was erected at the base of the ledge for the actor/victims (Richard Masur and Andy Robinson among them) to perform upon. The scaffolding was the brainchild of production designer Richard Sylbert and art director John Willett. By carefully aligning the camera in medium close-up with the real ledge bottom in the background, Curt Petersen was able to conjure the old Harold Lloyd effect of actors seemingly flung into open space with the safety of the platform immediately and invisibly below them.

For the actual falls, Thomas was determined to make each stuntman drop in varying ways. L.A.-based harness maker Connie Naegle was called in to make descender harnesses with 10 different attachment points from which the descender cable could be hooked. Thus, one stuntman was dropped suspended from a cable attached to his back, another was dropped from a cable attached to his groin, etc.

Because some of the victims were kicked off the sloping ledge, Thomas utilized a double descender (one attached to a skate) for each stuntman so that he could fall 30 feet forward as he fell downward 200 feet. One descender system employed a U-joint similar to that found on automobiles that allowed two or three stuntmen to fall at once using a single control. A motorized rewind system allowed Thomas to crank each stuntman back up for another 200 foot fall in only three minutes.

For POV running sequences over rough terrain, Fred Waugh used a piece of equipment he developed several years ago called the Pogo Cam. "The Pogo Cam is essentially a redesigned World War II Eyemo camera that weighs only 20 pounds, holds 100

feet of film, and is mounted on the top of a T-bar along with two batteries and a video monitor," explains Waugh. "The T-bar's bottom mass helps hold the camera steady, but the beauty of this system is that the operator's arm is the best steadying mechanism anyone could ask for!" Pogo Cams have caught on in the industry because they're so easy to use and never miss a shot – no matter who is holding them.

For snowstorm sequences, Thomas and first assistant Dean Lockwood and crew helicopter-long-lined in six tons of wind machines, large air compressors, foam snow making equipment and snow materials to the rock chimney ledges high above the Whistler mountain ski resort in the Canadian Rockies.

"Poitier and Berenger had to be immersed in freezing glacier-fed rivers and work on precipitous rock ledges, and they

performed wonderfully," says Thomas. "Robin Munsey's safety crew got us all through this rough-terrain action picture accident-free."

After work was completed in the B.C. mountains, second unit shooting on the streets of downtown Vancouver was a more familiar – through no less challenging – task for one and all. A car chase between Poitier and Clancy Brown preceeds the film's climax, and Waugh was faced with creating 'something new' for this clichéd action standby. Spottiswoode, ever-mindful of what his crew could accomplish, was generous with both time and money.

"That was exactly what I needed, because it gave John Thomas a chance to prep the chase cars properly, something that is often not done in the industry," says Waugh. "Because of John I was able to mount my cam-

era at wheel level, have the cars bounce through Vancouver alleyways at high speed, and not worry about the mountings coming loose."

The toughest gag Waugh ever coordinated was the sideways sliding of a car between two cars traveling over 40 mph with only a car and-a-half length between them. The stunt was repeated three times to perfection.

"When I did *Stakeout* I didn't think I would get another assignment that required such creativity for a long time, but this film proved me wrong," Thomas says. "My whole philosophy is to back the director and stunt coordinator to the hilt, and they reciprocated fully. I think the action sequences in this film are truly different, and will deliver a real punch to audiences." △

The author is a free-lance journalist living in British Columbia



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Innovations Spark *Captain Power*

by Al Harrell



Photos by Anthony Bliss and Marnie Grossman

"Walt Disney said he never made a film for children," says Gary Goddard, "He made films for the child in everybody." Goddard and his partner at Hollywood's Landmark Entertainment, Anthony Christopher, are the co-creators of one of the most innovative and controversial syndicated shows on broadcast television.

Peggy Charren of Action for Children's Television questions the use and effects of the show's interactive video – a process that involves using a toy at home to fire at on-screen targets.

Goddard claims, "the show isn't about interactivity, it's about people." He then goes on to add, "We deliberately designed the show to incorporate the technology without intruding on the show."

Produced by Ian McDougall of Ventura Pictures, Inc. in Toronto, Canada on

5.32 acres of an old bus depot that have been converted to state-of-the-art sound stages, the source of this innovation and controversy is the syndicated children's show *Captain Power and the Soldiers Of The Future*.

Set in 2147, Power and his soldiers are high tech warriors, who battle to save the rag tag remnants of humanity from Lord Dread and his mechanical Bio-Dreads, computer animated dreadnoughts.

In fact, the two integral parts of the show are the computer animation and the interactive video.

"This is the first time there has been a broadcast interactive television show," says Peter Benison, CSC, director of photography for the half-hour show. "So, it's a new field that required a lot of experimentation as we went along."

There are two parts to the interactive aspect of the show, as Benison explains, "There is the interactivity (the details of which Mattel, who created the process, and distributes the show through its MTS division, keeps under wraps) built onto the CGI (computer generated imagery) characters. There is also the live portion of the show with interactivity.

"A number of ideas were kicked around at the beginning, which involved having strobe lights on the various Dread troopers and on the Dread vehicles," Benison says; then adds, "The interactivity only works with the Dread trooper robots, the CGI characters and vehicles. You can't shoot at anything alive or human."

It was up to Benison to create the visual look that Goddard and Christopher had mapped out for the show. The six

minute promo developed for Mattel, directed by Christopher and shot by Michael Lawler, a commercial and special effects cinematographer, consisted of eight pieces of art work and a character and story bible.

Benison decided on small light boxes that the Dread troopers could wear and that could be installed on the Dread vehicles. "Since I intended to keep the exposure constant," Benison says, "and have the Ultimatte green color in the light boxes, no matter what we did on the show, if we were shooting in silhouette or side light; or if we had blue light at night or colored light, these light boxes would always give off an Ultimatte green. Because of the light boxes on the troopers we don't have to make too many lighting considerations."

Benison uses a T 4.5 exposure so that the density is always the same no matter which way the troopers are facing or what the set lighting is. Initially, he and his camera crew thought there might be some composition problems involving the interactivity units, but they found out if the shots were staged so that the targets were predominant in the scene, they weren't limited compositionally. "And as far as editing and how long shots are held, that varies with the size of the target in the frame," Benison says.

But before the impression is given that this is a show that sacrifices lighting and composition for clear shots at robot targets, it should be noted that Benison has been encouraged by the show's creators to go for a moody, textured film look. "Because Gary and I are from a stage background," says co-creator Christopher, "we wanted a theatrical look to the sets. We wanted to get dimension in the sets through lighting."

"At the very beginning," adds Benison, "we all agreed to go with a fairly contrasty, low key, crisp look for the show. Being a studio shoot, and having some unusual sets, we wanted to avoid front lighting as much as possible."

Part of that look is achieved by the conceptual design of Ed Eyth, and the detailed, textured models created by Ron Thornton and David Jones. The sets are backlit, creating not only depth and mood, but also allowing for faster set-ups.

"When we go into a set, we pretty much stage scenes shooting in three directions. This means we'll set up a master, which is totally backlit," Benison says, "then we'll stage coverage to either one side or

the other, which gives us side lighting with a little fill that we're controlling to about two stops under."

Blending the backlighting and quick set-up time, a must for a show that allows only five days for shooting, is part of the reason Benison chose a T 4.5 exposure. Since many of the sets contain computer screens, flashing lights, and practicals, Benison didn't want to shoot wide open, because the screens and practicals would bleed out, or prove difficult to control. The T 4.5 exposure also gives a certain amount of depth of field. "That is needed," Benison explains, "for moving quickly through two and three shots, and the actors don't have to be hard on their marks for the depth of field to hold."

"By shooting at a consistent light level, the crew knows what lighting units we need and how I like to light a set," Benison says.

The show shoots 22 minutes of film in five days, using the 35mm Moviecam Super America cameras. Benison likes the features of the cameras, which include video assist. He uses 5294 at ASA 400 for the interiors and 5247 for the limited exterior work. The green screen and composite work is shot on 5295, a stock Kodak created specifically for effects work.

Green screen was chosen over the more conventional blue screen for the flying and matte work scenes, because the color of the uniforms that Captain Power

and his soldiers wear beneath the metal power suits Robert Short designed, come close to the shade of blue used in the blue screen.

A 30 x 90 foot painted green screen cyc, with a 90 degree curved bend was constructed on the 35,000 square feet that makes up stage A, where the flying rigs and permanent sets are housed. Because the size of the green screen limits the amount of movement in the flying sequences, the camera crew makes most of the flying moves with the camera.

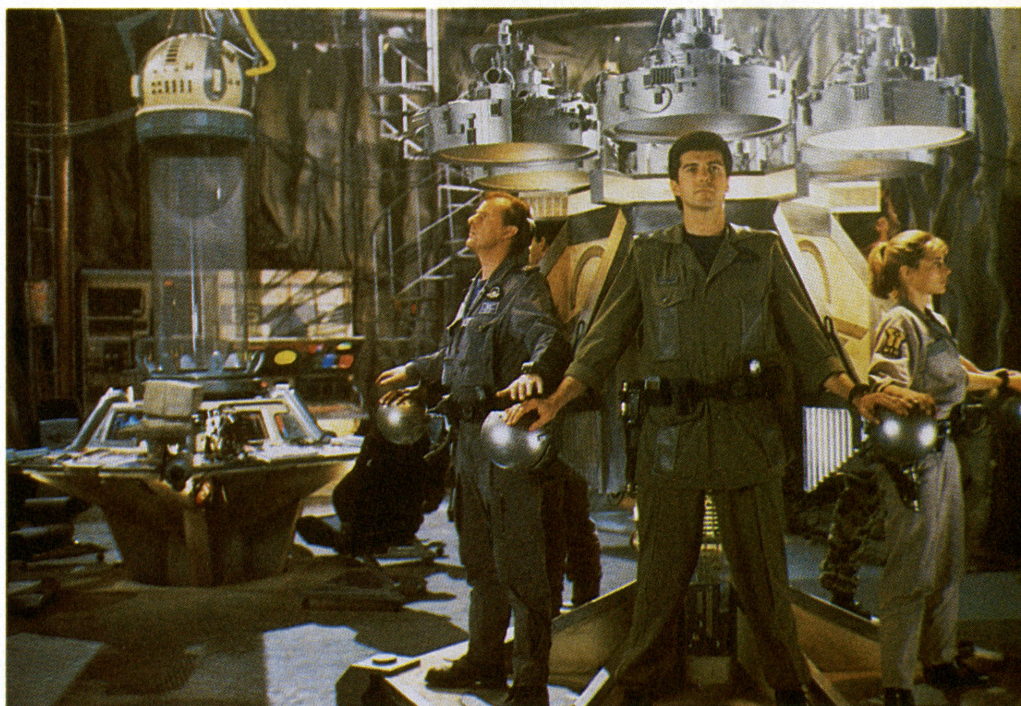
"We use a barrel rig for the camera. It is centered on the optical axis of the camera. The camera can rotate from side to side or spin 360 degrees on its lens axis," Benison says. "The character then appears to be going side to side or doing barrel rolls in the sky. Of course the character is only hanging straight from a harness rig. All the movement is done with the barrel rig, combined with cranes, zooms, pans and tilts."

The barrel rig made the mechanics of staging the flying sequences simple; the metal power suits made lighting the flying sequences complicated.

Short, who has designed and built mechanical special effects for *Splash*, *E.T.* and *Cocoon*, constructed the power suits out of a lightweight chrome. Chrome reflects light and the green screen used for the matte work.

"We've done a couple of things

Opposite page: Captain Power and soldiers prepare for battle against Lord Dread. From left, Tim Dunigan, Peter MacNeill, Maurice Dean Wint, Jessica Steen and Sven-Ole Thorssen. Below: Preparations made to 'power on.'





Above: Thorsen monitors Lord Dread's movements as Dunigan looks on. Right: Dread (David Hemblin).



with the chrome suits in terms of reflecting the green screen. One of the key things is to try to reflect in other colors," Benison says, "Blue at the top to simulate sky; and we've built a conveyor belt underneath the characters as they hang from their harness rigs." These conveyor belts, rigged with cloth painted in sand and rock camouflage patterns, are cranked by hand, causing moving reflections in the chrome. These moving reflections create the effect of the metal suited warriors flying over terrain.

A light coating of thin glue is also put over the chrome and sprinkled with sand. The chrome look of the power suits is maintained, while the surface is broken up, thus preventing hot reflections of the green Ultimatte.

The green screen work and most of the other sets are lit with conventional tungsten units. However, night shots in large areas are lit with HMI's, and the

jumpship set is lit with MR16's, a very small reflector type bulb.

The jumpship set, the interior of Captain Power's crew flying transport, is small, and hiding lighting units is difficult. The MR16's can be placed in the tiniest area. These units can be used for highlighting and also serve as key lights. On camera, the MR16's appear as small points of light and not as movie lights.

Benison also has his lighting crew use inkies on the jumpship set, hiding these units behind chairs and consoles. The inkies, with frost on them, act as fill light.

"Other than that, we use the Optima 32 fluorescent bulbs with no brackets on them, and the ballast separate," says Benison. "Using various sizes, we gaffer tape the Optima 32's to small areas just out of frame, or hide them behind people or objects in the scene. This always gives a little extra fill light, and appears to be coming from a computer console or other instrument bank."

These units and the 110 three strip cyc lights on the exterior sets, help maintain the feature film look that the show's co-creators, Goddard and Christopher, wanted. That feature film look is evident even in the miniature work shot by Toby Heindel.

The miniatures are built on the sound stages under the supervision of David Jones and Ron Thornton. Because Benison and Heindel are shooting in the same complex, the miniature work can more easily be lit and shot to match the live action footage.

The miniatures are used in two ways: as wide angle establishing shots for sets that don't exist, so that when the live action footage is shot the camera can go in close; and also as background plates. The background plates are used for the CGI characters to fly through, as well as the miniature bikes and ships, and as background plates for composites with the live characters.

Benison also works closely with the transfer house in order to keep the textured, moody look of the show when it's transferred from film to tape. "The transfer house is very good with us," Benison says. "In the beginning, they came over as we brought our different fixed sets on line, to see exactly what everything looked like in reality. They saw how we were doing the lighting.

"In addition, I carry in my meter pouch a little micro cassette; and I record the notes on the various scenes that we're

shooting during the day – what the contrast ratio is, what the predominant colors of the lights are. The transfer people are able to listen to these notes, and know what specific effect I'm after. Also, we shoot color charts at the head of every scene, and I have strict instructions for the transfer house to balance to that color chart."

The transfer house is also responsible for taking the matte from the light boxes worn by the Dread troopers and installed on their vehicles, and putting in the interactive signals.

"We planned out how we were going to work on our sets," Benison says, "and how we'd orient them, especially the exterior sets. We planned out the exteriors in order to get the best type of lighting, and we made provisions in the sets for camera ports to shoot through."

Benison also notes that early in the storyboard phase of the show, Goddard and Christopher made it clear to the production people that they wanted the show to have the acting and production values of some of the classic children's shows like "Sky King" and "Fury." The computer graphics work of the ARCCA technicians – headed by Bob Robbins and Early Huddleston – is essential to achieving the level of production value.

Benison and the art department have come up with ingenious ways to enhance the ARCCA computer graphic work and integrate that work into the live action. This includes "air hoses buried in the ground at the distance between the CGI characters' legs, so that when the characters land, the hoses blow up dust. This action creates the effect of the CGI flying character Soaron landing and kicking up dirt," Benison says; then adds, "We also make silhouette shadow passes of the CGI characters over our live action characters. We use rubble or debris next to the CGI characters to hide shadows that aren't there."

It is this type of work that gives the show a cutting edge quality, in spite of the controversy over the Mattel toy tie-in with the interactive video aspect of the production. This is a children's show that is high-tech TV, that's only beginning to tap into its technical capabilities, especially in regard to the CGI characters created by the ARCCA technicians and animators. As Benison points out, "It's another tool for the cinematographer to deal with and learn from. We're discovering how computer animation can work. This is what makes working on the show exciting." △

CAPTAIN POWER



January 12, 1987

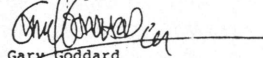
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New Horizons In Computer Animation

by Al Harrell

What began as a six minute promo film for a children's show with a toy tie-in, has become a half hour syndicated broadcast that is on the cutting edge of computer animation technology.

The syndicated show *Captain Power And The Soldiers Of The Future* was created by Gary Goddard and Anthony Christopher of Landmark Entertainment (also creators of Universal Studios' *Tour Conan The Barbarian* and *2010* shows). It chronicles the exploits of an elite group of power suited soldiers, as they fight against the backdrop of a machine-ruined earth controlled by Lord Dread and his mechanical Bio-Dread Empire and the mega-computer Overmind.

The show incorporates some of the most sophisticated computer animation work to date into the live action sequences.

"We went through three animation companies to get the proper look, feel, texture, and movement to the computer generated images," says Christopher, who directed the six minute promo that sold the show to Mattel.

Christopher and Goddard selected Bob Robbins and his ARCCA company to do the computer graphics for the show. ARCCA (Around the Clock Computer Animation) is based in Canada. Working with Earl Huddleston, ARCCA's creative consultant, Robbins' company is responsible for the CGI (computer generated imagery) characters of Soaron, a flying mechanical being and Blastarr, a ground assault mechanical dreadnought, two of Lord Dread's storm troopers.

"We're probably talking about \$75,000 to \$100,000 for each character just to get into the computer," says Goddard.

The intricate process that incorporates the CGI characters into the live action is explained by Peter Benison, CSC, director of photography for the show. "In order to maintain the lighting on the CGI so it matches the lighting of the sets," says Benison, "we photograph at the beginning of each background plate several beach balls.

"One is painted white, one is painted silver to match the coloring of Soaron, and one is painted copper to match Blastarr. These balls show the computer programmers what the lighting on the set is, as it hits these colored balls — the programmers can see the color of the light, the source of the light, and how the light reacts to the silver or copper. These balls are color and contrast references."

These color and contrast shots are then mapped into the computer, which also has set reflections programmed onto the metallic surfaces of the CGI characters. These surface reflections, light sources, tints, color and contrast ratios are put on the CGI characters and helps integrate them into the live action.

All of the interaction between the live action characters and the CGI characters is storyboarded in detail, so the Robbins and the ARCCA animators know exactly where the CGI characters are going to appear and exactly what kind of action they'll have.

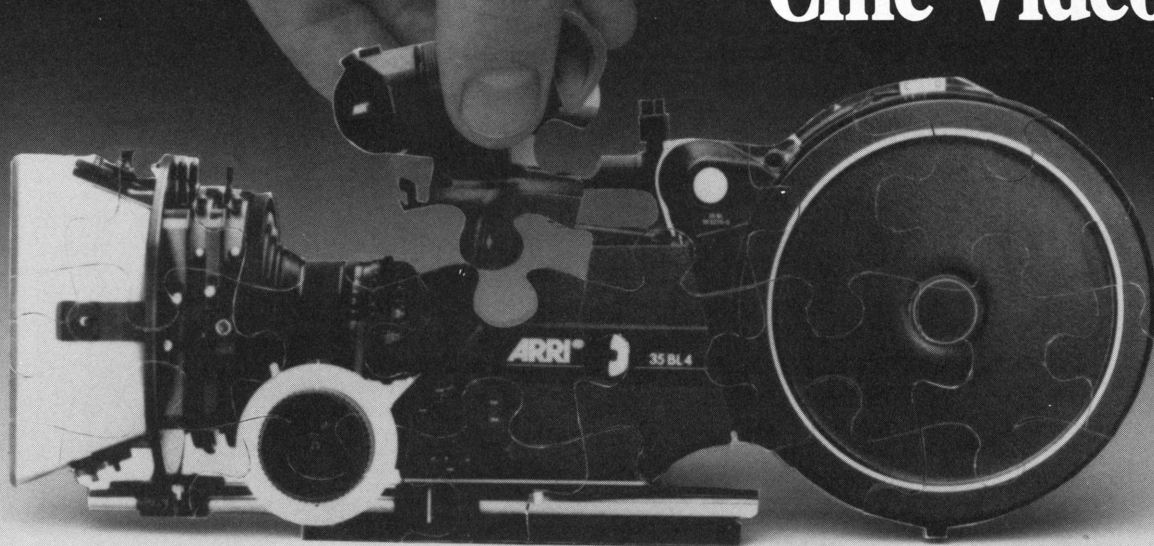
"We look at the space for the CGI characters to work in," says Benison. "Soaron is over seven feet tall, so space must be maintained for him to appear. If he's in a building, everything must be to scale."

Once the ARCCA computer animators see where and how the show's directors plan to use the CGI characters, they create their own storyboard, and do "quick shades." Quick shades are simple pencil tests similar to the pencil tests conventional animators use to rough out character shape, movement, and action. These quick shades give enough of an approximation of how, where, and when the CGI characters will move within the frame in relation to the live actors, background plates, and sets.

The quick shades are then integrated with the live action characters and background plates. All these elements are then run through a video time base correc-

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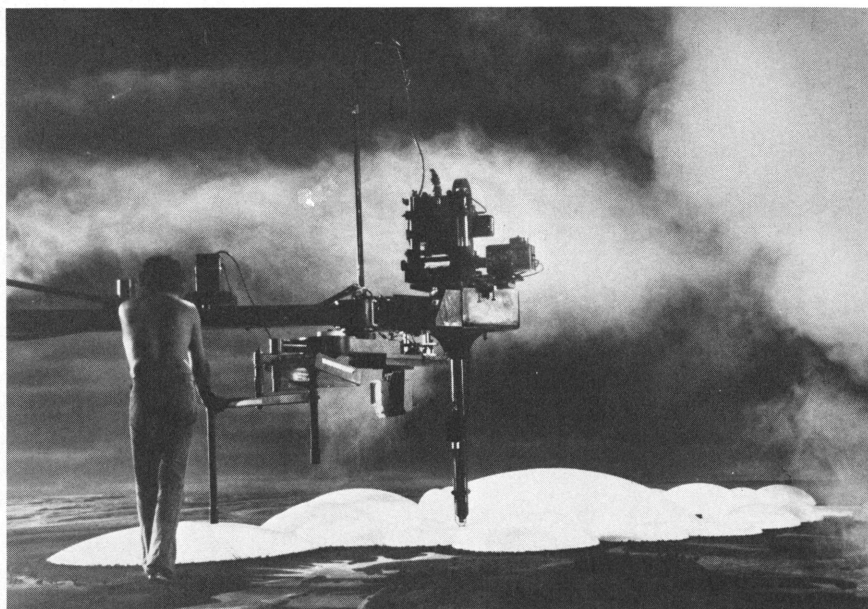


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tor and mixer, creating a rough video composite.

Cardboard cutouts, made to scale, are created of the CGI characters and placed into the scene to check scale and perspective. The cardboard cutouts are then lined up with the pencil tests.

"From these," says Benison, "we make accurate notes on the camera height, the lens, the angle of the camera, the distance of the CGI characters from the lens."

This information and the color and contrast reference shots information is mapped into the computer, when the vector line renderings of the CGI characters are done. The completed graphic image maintains the same perspectives, angles, and distances on the characters that were shot in live action.

The completed CGI character, as Robbins says, "is composited in with other live action characters, live action settings, miniature model settings and stock footage." The composited work is shot on 5295 film stock.

The CGI characters, to date, are very sharp, so a depth of field must be maintained across the sets to enhance the feeling that they are a part of the scene and photographed at the same time as the live action. Currently Robbins and the ARCCA animators are working on techniques to soften up the CGI characters, and there is accurate blurring of the CGI characters when they move within the frame.

The computer created vector line drawings that make up the CGI characters are digitally composited on an Abekas unit, which creates multiple composites without generation loss.

ARCCA has purchased an Abekas A-62 unit for the exclusive use of the show, but in order to keep up with its 22-show syndication commitment, other units are rented as needed.

With Bob Robbins and the Canadian ARCCA technicians and Earl Hudleston at Landmark's Hollywood center constantly pushing the creative envelope of computer graphic animation, the show is just beginning to explore their capabilities. The CGI characters are a heady testament to just how far computer graphics techniques have progressed. No longer limited to the slick airbrush-like quality of a few years ago, they can now be intercut, and composited, with live action footage. △

Rebo Takes High Definition to Big Screen

by Brooke Sheffield Comer

No one knew what to expect. Put a video oriented production/post house (Rebo HD Video Inc.) together with a die-hard film crew, and you could wind up with anything from quarrels to chaos. But peace reigned on the set of the first American-made high definition feature, *Do It Up*, starring and directed by Robby Benson.

There was some good natured jesting. "Everytime we needed to register the camera, or do something that wouldn't be necessary on a film shoot, the crew would jibe us," admits producer Barry Rebo. But film-bred wardrobe and make-up people were amazed at the nuances Sony's HDC-100 camera could bring to their departments. "Consequently, everyone improved. There was so much more in the picture, that everyone felt pressured to do extra well," Rebo reveals.

Is the story that simple? Film crew meets video house, and the two factions work extra-well together? High resolution breeds higher esthetic standards, with no intrinsic problems? "It was hard work," says Rebo, "but isn't the production of any film?" *Do It Up* is not just any production. Consider the fact that the video-oriented Rebo team had to create visual imagery on one format, and predict how the final outcome would look in yet another format—not to mention the adjustment process to Sony's new HDC-100 camera.

Rebo and company approached *Do It Up* as a film shoot. They really didn't have much reference material, being only the second group in the world to embark on an HD feature. But Rebo was able to get feedback from Italy's RAI, whose *Julia and Julia*, starring Kathleen Turner, was the first feature made utilizing the HD system. (See *American Cinematographer*, Sept. 1987.)

In true film style, no monitor graced the *Do It Up* set. "We didn't want to get in the habit of watching a lot of playbacks," explains Rebo. But little by little, it became convenient for Benson to see his own performances, in the control room,



Above: 'The Wiz' (Jhimi Kennedy) center, about to kill drug cheats while 'The Tin Man' (Mark Margolis) and Scott (Robby Benson) watch in horror. Left: Benson and Tawny Kitaen, innocents lured by drug money, star in *Do It Up*.

with the tape machine. Traditionally, a cinematographer or camera operator is trusted to know if a shot's in focus, or if the mood is

good. Then the director can look through the lens and confirm it. But since Benson was often on the other side of the lens, he used

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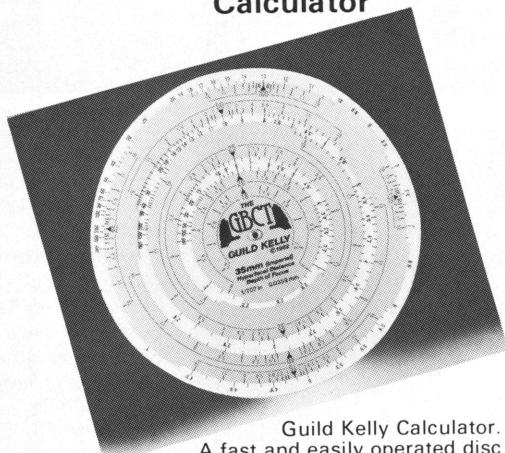


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the monitor to check scenes. "We used the monitor *judiciously*," Rebo states. "We never kept it on the set for fear of slowdown, and too many opinions. But it did give Robby a chance to catch a boom shadow, something he ordinarily wouldn't see till the next day's rushes, and have to re-shoot." Benson is even reported as saying he missed seeing rushes, and finding out what he didn't get in a scene, "because with tape," says Rebo, "you *always* get it."

Barry Minnerly, chief engineer of HD and a Rebo partner, makes a point of stating that "we weren't *shooting* into a monitor." He found he could set up a lighting style, run the camera, and watch the whole thing in very high quality, then make adjustments. "In film, there isn't always that chance," he notes. "The DP isn't necessarily operating the camera, so he may miss a problem." Minnerly resisted overindulging in too many little nuances though. "If you do everything through the monitor, you can get carried away," he adds. He too worked true to film, lighting first, then doing a tech rehearsal, then seeing actors do their moves. "Stand-ins were worthless...they were good for framing lights, but they didn't do what the actors did." Only during a run-through could Minnerly catch a shadow on someone's face and adjust accordingly.

No one cites high definition as the "tough part" of the project. "Making a movie is tough no matter what format you're making it on," says Rebo. "There are a lot of logistics and intense labor involved." Since his team was well versed in video, Minnerly's attempts to motivate *Do It Up* to "video noir" wasn't as impossible as it sounds. The high key source lighting lent dual moods to feed the film's ambience. Gangster scenes were shot in a lot of light, with very dark shadows, "but when we shot in a family home in Queens, the light was very warm," says Minnerly. "You could see the difference."

Minnerly and his colleagues agree that their biggest problem was trying to visualize how the image they saw on the 20" monitor would look on a big screen. The RAI production solved that problem by utilizing a video projection system that gave them the Big Picture then and there. "There is a certain image retention in the camera," say Minnerly. "It's difficult to ascertain whether it's in the phosphor of the TV set, the monitor, or in the recording. Because the video projector is reflected light as opposed to emanating light, it doesn't have that lag.

You know you're recording detail you can't see on this little monitor."

Will Minnerly be in for a big surprise when *Do It Up* hits the big screen? He is reassured by the fact that the transfer process that makes frames into footage will quell diversionary shadows. "We did a test, and some of the things I didn't like in video — such as neck shadows or a strong key — would just blend away, on film. The eye wouldn't be drawn to it." Rebo himself responds to the esthetic difference between tape and film; somewhat surprisingly, for such a video entrepreneur as himself, he still favors the look of film. "Film is still prettier to me," he affirms. But he's excited about getting to film by way of electronics.

In Italy, he saw two versions of *Julia and Julia*, one projected as video and one as 35mm. "The 35mm version was so much more interesting," he remarks. "In video it was flat and clean...even with the same composition and lighting, film looks more flattering. It's what we're used to." Minnerly cites the inherent distance in film. "You buy the film look as a suspension of reality much more than you buy the live look." And even though HD doesn't look like film, it has its own inherent look that no doubt people will buy. "Video still has its weaknesses," Rebo points out, "but so did film once upon a time." People, he believes, will learn to get around those weaknesses.

Smith's approach to lighting and shooting *Do It Up* reflects some of the ways that he is learning to get around the weaknesses of video, and high definition in particular. Like many of his film colleagues in London's early 70's, Smith initially felt intimidated by video. He'd done some still photography, made Super 8 movies, worked in a film library, and an animation house. Then he became a film editor. The BBC was involved in a lot of video editing then, but the 20-year-old Smith balked at getting involved in a new format. "The film attitude at that time was that you had to have a PhD in electricity to work in video, which created an intimidation that holds over to this day. We felt that the boffins who could twiddle knobs and work the scopes weren't creative enough and subtle enough to pull off the image, as we could on film." Smith's film loyalties didn't sway tape-ward until he moved to America and snagged his first job as a lighting director on an industrial shoot. The dramatic spot was produced by none other than Barry Rebo. Impressed by young Smith's knack, Rebo invited him to stay on at

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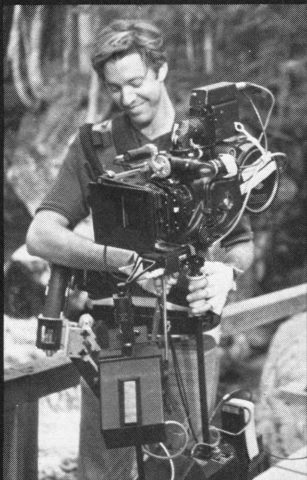
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Rebo. Smith stayed. His allegiance to videotape thus evolved.

By the late 70's, Rebo was attracting some of the best video clients around – including MTV – and was creating the perfect atmosphere for Smith to shed some of his video intimidation. "I realized that video had evolved away from the PhD boffins, and was now in the realm of creativity that ordinary Joes could work in." In one decade, from '70 to '80, video became a viable entity. Smith decided to join the younger contingency of video makers, and help tape grow as a format. He lent his film-style lighting techniques to Rebo shoots as much as he could. "I rarely had the opportunity to do dramatic pieces," he notes. "And it was still NTSC." The intrinsic limitations of that format kept Smith – and Rebo – locked into documentary type work...until the advent of high definition.

No one was surprised when Rebo became the first facility in America to purchase the new HD system. HD was essentially what Rebo had been working towards for years. "With all the freedom of HD, it's quite versatile," Smith exclaims. "It's not a tiny format that transfers poorly to film." Versatility granted, he was nervous about shooting a feature on the new system – and understandably so. "I realized that everyone in the industry would be taking a close look at *Do It Up*. A lot depended on our success. With virtually no reference point to draw from, Smith concocted his own approach to lighting for HD. He wanted to be faithful to film's look and style, "so I lit with a key style, a shoot-em-up kind of look. It's a moody film, with gangsters and villains, depicting the crazier side of life." Hence his key style was appropriate. Besides, that's the way Smith is accustomed to lighting his projects.

Early in the shoot, Smith experimented with softer lighting styles only to discover that frames transferred better when he went more direct. Then he began to work with firmer lighting. "A bright edge light or a solid key gives you that sparkling frame, so the dark parts just fall away and you have a relationship between the dark part and the light part that makes the whole thing work," he explains. Seeing his first instincts for key style transfer so successfully to film gave Smith extra confidence as he continued with the shoot.

How did Smith manage to light and shoot *Do It Up* when he did not know how the film transfer would change what he

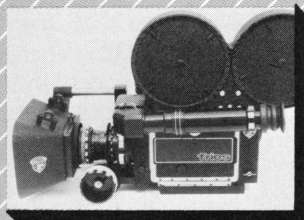
saw on his monitor? He knew that what he saw wasn't what he'd eventually get, and thus relied on the monitor as more of a ratio between the higher light area and darker areas. Because he knew he was going to film, he could push even beyond the limits of NTSC. He knew that hotter spots, that look poorly on tape, would be brought back down by film. Still, he admits that after doing only four music videos and a commercial in HD, jumping into a feature required "a quick turn-around from 400 foot candles and a blue screen to the very lowest sensitivity end, the lowest light level we could handle. It was a hell of a change to do on a dime, with only one test in between, but I think we did pretty well."

Smith's test gave him a vital reference point to work with throughout the film. Four days before *Do It Up* commenced shooting, he and his colleagues tested a few simple lighting set-ups in the Rebo studios and transferred to film. "I kept the results of that one little test in my memory all through the production of the film," Smith exclaims. "That one little test!" Thus he devised a standard for lighting balance throughout the shoot.

Smith was used to his favorite video camera, Ikegami's 79-A, and found Sony's HDC-100 to be less sensitive. "I almost don't need a light meter when I work with the Ikegami," he notes, "whereas, the Sony takes a lot more light." He tested the Sony prior to the shoot, and estimated its ASA to be at about 100. When Smith compared notes with the Canadians, he found their figure to be compatible with his. The Italians however, estimated at 50 ASA. "It's kind of arbitrary," Smith admits, who finally determined the ASA to be around 65. "Because the Sony is slower than the Ikegami that I'm used to, I can end up with a pretty bright set and make myself comfortable by staring at the monitor."

If *Do It Up* had been shot on HD and sent directly to NTSC, then Smith could have more range to really use his lens, particularly in the area of diffusion. "I could really lay on gold diffusion, for soft sensuous scenes," he remarks, "knowing that what I'd see is what I'd get." But because he shot intending to go to film, he doesn't, for instance recommend using the likes of Super Frost #1. "That would look nice if I was going to NTSC, but when you go through the film transfer, your images get softer. I needed to subtract and reduce the amount of diffusion at the shooting end." How much diffusion, Smith stresses, should be predi-

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cated on where you're going with your final format. Even though he still advocates shooting clear, with minimal diffusion if the tape is going to film transfer, he did use some Super Frost on *Do It Up*. "I kept it minimal," he notes. "I didn't go more than 00+, and I used it mostly to blend lights. You take a risk when you don't know what the transfer process is going to create." But the transfers he's already seen have confirmed that. Smith made the right diffusion decisions.

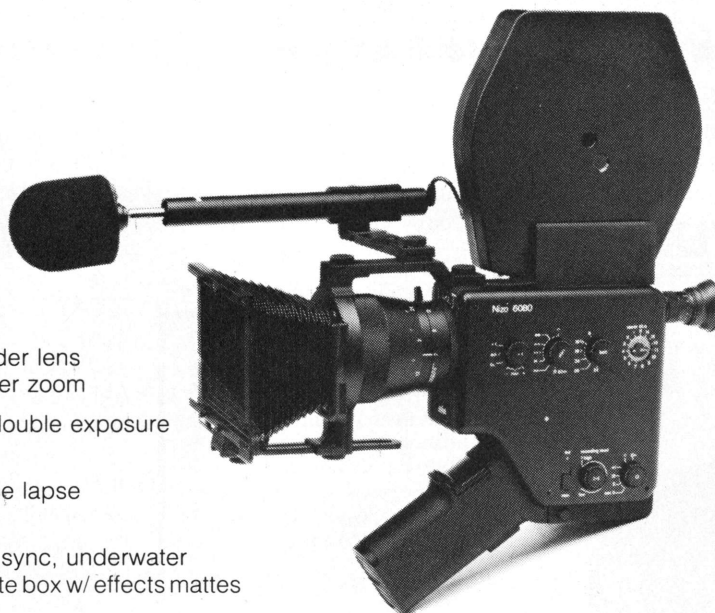
When Neil Smith put Sony's HDC-100 camera to the test in filming *Do It Up*, he gained considerable insight in terms of contrast ratio. "Ordinary broadcast video," says Smith, "or what we are ashamed to admit we *sometimes* call low def, can be lit very beautifully in a variety of styles. But there's no doubt that the acceptable latitude between the highlight and shadow is so narrow that convincing dramatic photography is occasionally difficult and time consuming." He refers to the gelling of windows, the dulling of chrome, and adding fill.

Technically, the contrast ratio with HD is the same as the Ikegami 79A. But the increased information that HD's 1125 lines delivers puts more detail in the shadow area, "and seems to have resolved some of the awful contrast problems of standard video." This means that Smith could use less fill, or none at all on *Do It Up*. The extra information also gave him a separation he'd often had to add in working with the NTSC format. "It is now possible to have a hotter value in the frame," he adds, since the film transfer process will even out hot spots or white shirts that catch the eye on a TV monitor.

HD video is, to Smith, easier to light than standard video. But there are still problems to overcome. "The video lag of those kicks and white shirts that comet-tail during a fast pan or shine through passing actors are infuriating," he notes. Given the tight shooting schedule that he, Rebo, Minnerly and Abby Levine had to work within, the lag factor that even Sony's HDC-100 displayed, proved problematic. "And it's aggravating," Smith adds, "to have to re-introduce the NTSC problem-solving lighting for a technical hang-up that we all thought we saw the last of in the days of 1/2-inch reel-to-reel."

Because Smith found the Sony's ASA rating to be a lot lower than his original estimate going into the picture ("I tested it to be about 100 ASA, but I'd say now that it's

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closer to 65"), he worked with his favorite meter; the Quantum foot candle meter.

"We tried to shoot everything at 2.8, and almost succeeded," he reveals. At 2.8, a strong key level would be 150 foot candles (FC), "and for a gentler, lamplight key I'd work at 58 FC, going up to 250 FC for a powerful window key." And the HD format held detail throughout. Despite lag and speed problems, Smith believes that the system is here to stay. "The pictures are incredible on tape and beautiful on film," he notes. "I'm thrilled to think that this HDC-100 is a production prototype of new technology. If the first one is this good, I can't wait to work with the next generation. And in the realm of electronics, you never have to wait long."

Do It Up is a revolution in movie making. But Smith insists that within the context of the new standard, there is nothing revolutionary itself. Thus he does not consider himself a pioneer. "I shot on HD in a very filmic style, as anyone would shoot a film," he remarks. "We had difficulties to overcome, due to the newness of the camera, and system." But the obstacles he cites, thick cable tethered to the equipment and a slower ASA rating, have creative solutions. For instance, 300 feet of 3/4" cable doesn't mean you can't do car chase scenes. It means you put a generator in a pick-up and run the gear from that. Cable connections are going the way of fiber optics built by Rebo engineers. "We didn't break revolutionary ground," Smith declares, "we shot a movie. The movie just happened to be on HD." The movie also happened to be a straightforward drama, as opposed to a vehicle for special effects. And in *that* area, the potential for the new format is mind boggling.

"Because you're shooting live, you can do much more complicated work," explains Smith, "like rolling back the previous mattes and lapping onto new mattes. It works before your eyes!" Of course, that's only the beginning. "The next step," Smith predicts, "is libraries." With stock shots of any of New York's four seasons, productions won't be bound to such rigid shooting schedules anymore. And they won't be limited to inclement weather conditions either. "HD offers a whole new ball game, that the film community is just waking up to," Smith observes. "If they're not banging at our door yet, they should be." △

Students Collaborate on Pro Video

by Mike Maginot

Country-Western singer, Calamity Jayne was tired of one night stands in Vegas. She wanted the mass appeal music video had to offer and began shopping around for a production team.

Her concept for the video was that she had achieved her dreams of success, her fans adored her, and she even had her own souvenir shop in Nashville. Estimates were high, especially since she thought shooting in Nashville was a necessity. Also she wanted broadcast ready tapes in three weeks.

Calamity approached director Sharyn Blumenthal with her project. Blumenthal, who is a professor at San Diego State University, came up with some cost cutting ideas. She suggested working in San Diego with a crew composed of seasoned professionals and students. A trip to Nashville would be too expensive. It made more sense to build a set, than to shoot in a far off location.

Director of photography Linda Brown had worked with Blumenthal before on documentaries and student films, but Brown considers the Calamity Jayne video her first effort on a genuinely professional level.

"One of the things that Calamity was concerned with," says Brown, "was that since it was her first video, we should show several aspects of her personality. We wanted her to look sexy, but not overly sexy. We wanted her to also look soft. We tried to incorporate many moods into three minutes. It was fun because I got to use all different kinds of lighting."

The entire video was storyboarded, except for a few pickup shots. The set was designed by a student, Dave Tanaka. Tanaka is a cinematographer himself, so Brown found it easy to work with him. When she needed a particular lighting ratio, he was able to achieve it within his set design.

Together they worked out the problem of creating the look of a neon sign



without going to the expense of buying one. Using a plexiglass sheet with black tape over it, they cut out a possessive "Calamity Jayne's." Using a clever combination of diffusion and exposure they were able to get the look they wanted.

Blumenthal took time out of production to teach students who had volunteered to help on the video. Since they weren't getting paid, she felt it was only fair they get something for their time.

"When the students walked onto the set it was complete," observes Brown. "There was something magical about it. This wasn't just hanging around and watching a shoot. If you were there, you were working and you weren't goofing around. We were serious and you either contributed or if you felt you weren't qualified, you sat on the side and didn't interfere."

"They saw how people function on a set: there's a chain of command. When people ask you for something, it should be



Scene from Calamity Jayne video. Left: The star of the piece.

Photos by David Creech

done a certain way. You do it the way it's asked to be done. It's not a game."

Brown shot with one camera, a standard CP16, with a 10 to 1 Angenieux lens. Her film stock was Fuji negative, half high speed and half low speed, which matched very well on the video transfer.

In the process of conserving her film stock, Brown took the chance of overexposing some of her high speed film with neutral density filters. She was pleasantly surprised with the latitude.

Brown was worried about the

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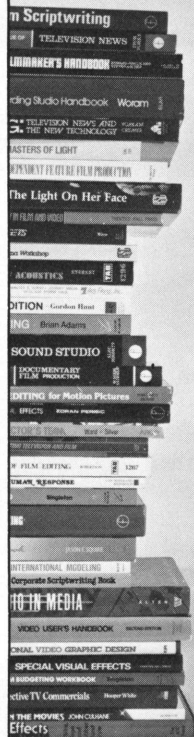
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broad gestures Calamity had developed performing in night clubs. An effort was made to tone her down. Long shots and cutaways helped tremendously. Takes of Calamity in motion would later be smoothed out with triple dissolves in editing.

Although Brown didn't have the lighting package that she would have liked on this project, she stresses that having a good support team, willing to share their ideas and take risks, was just as valuable.

Despite a definite plan and schedule the crew was far enough from the Hollywood milieu to feel comfortable with some experimenting. Ideas came up while shooting and were tried. A circuit of lights turned off during a break suggested an entirely new approach to one shot.

There was a great deal of trust on the set. When Blumenthal asked Brown to keep rolling on a shot that went soft, she did so with some trepidation, but later saw how it was made to fit in the editing.

The shoot was three days. Despite all of the efforts to cut costs, the production team ran out of money. More would be needed for the video post-production and special effects. Calamity was pleased with the rushes, which had been transferred to video, and expressed no qualms about investing more money in the project.

Production manager Missy Boswell is credited with presenting Calamity with the budget picture that could have existed if cost cutting measures had not already been taken and the thrift that could be applied to finishing the project.

Besides the aforementioned triple dissolves, post-production included ADO effects, freeze frames, and solarization. The finished video was out in three weeks and has played on the Nashville Cable Network.

Blumenthal and Brown's work with Calamity Jayne isn't over. Blumenthal has plans for another video and Brown is making a documentary about Calamity Jayne as a thesis project for Temple University.

Brown likes working on music videos because they offer the opportunity to work in many styles in a short time, highlighting her abilities. On student films, she points out, you may never see a copy of your work to add to your demo reel. Calamity Jayne's video gives her something to show.

△

VideoGram

by Mike Maginot

*TV's Best Adventures of Superman:
Volume 1*

Special effects have come a long way since George Reeves first played Superman in *Superman and the Mole Men*. They have come even further since Kirk Alyn played the Man of Steel in the 1948 15-chapter serial *Superman*.

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"Superman On Earth," the first episode of the TV show, was shot in black and white. "All That Glitters," the show's last episode, which was directed by George Reeves and photographed by Joe Biroc, ASC, is in full color.

Other shows from the TV series are available in *TV's Best Adventures of Superman: Volumes 2, 3, and 4*, also with Fleischer cartoons. You won't find a better hero sandwich on video.

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La Bamba
Produced by Taylor Hackford and Bill Borden.
Directed by Luis Valdez.
Photographed by Adam Greenberg.

Lou Diamond Phillips, Rosana De Soto, Esai Morales, and Elizabeth Pena star in Luis Valdez' version of Ritchie Valens' life.

Adam Greenberg bathes the characters in warm tones symbolic of their burning desires. Los Lobos, Carlos Santana, and Miles Goodman provide the music.

• • •

The Believers
Produced by John Schlesinger, Michael Childers, and Beverly Camhe.
Directed by John Schlesinger.
Photographed by Robby Müller.

A police psychologist, played by Martin Sheen, comes into contact with a strange religious cult called Santeria, when he tries to help an officer thought to be

involved with a ritual sacrifice. His son's discovery of a wishing shell brings his involvement even closer to home.

Schlesinger's documentary technique and Müller's realistic cinematography make the impossible seem real. Mark Frost's screenplay based on Nicholas Conde's book, *The Religion*, doesn't offer a shadow of doubt that the Santeria cult exists or that the ritual magic practiced by its worshippers can affect people in fantastic ways. This inherent acceptance of its own devices makes *The Believers* one of the screen's best thrillers since *Rosemary's Baby*.

• • •

The Belle of New York
Produced by Arthur Freed.
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Photographed by Robert Planck, ASC.

Who can knock a movie where a lighter than air Fred Astaire dances across the New York skyline? *The Belle of New York* features many such special effects as love for Vera-Ellen lifts light-footed Fred off the ground.

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Marjorie Main and Alice Pearce provide comic relief.

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Andrew Wyeth: The Helga Pictures
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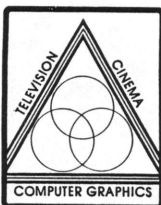
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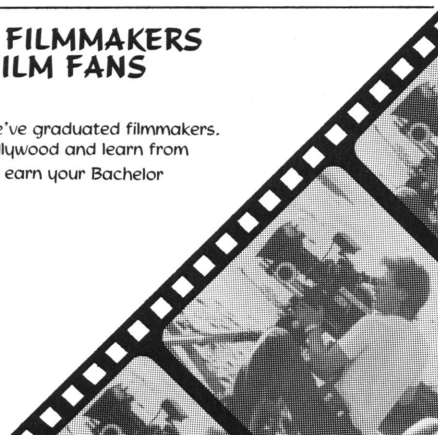


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Directed by Dennis Power.
Photographed by Gregory Andracke.

For 14 years, painter Andrew Wyeth, best known for "Christina's World," had his neighbor in Chadds Ford, Pennsylvania, Helga Testorf, model for him. The resulting body of work, over 200 pictures, is the subject of this video.

Written by Alvin Martin and hosted by Charlton Heston, the program traces Wyeth's meanings and methods. The laser disc version also includes a picture archive of 237 pictures.

Filmed on location in Chadds Ford, *Andrew Wyeth: The Helga Pictures* takes us into Wyeth's world to discover his techniques and the source of his inspiration.

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"If You Love Somebody Set Them Free," directed by Godley and Creme, has Sting playing guitar and singing within multiple outlines of himself. Other members of his band are matted, superimposed, and freeze framed rhythmically around him.

"Fortress Around Your Heart," directed by Mick Haggerty, finds Sting on a platform with his guitar. Photographed in black and white, this video looks like a collaboration between Walker Evans and Yousuf Karsh.

"Love Is the Seventh Wave," directed by Richard Longcrane, combines live action Sting with childlike animated animals and landscapes.

"Russians," directed by Jean Baptiste Mondino, is also in black and white, combining elements of German expressionism and images drawn from the works of Rudolph Maté, Gregg Toland, and Karl Freund.

"Bring On the Night" contains live concert footage with superimposed and composited freestyle painting. It was directed by Donna Muir and Sue Huntley. △

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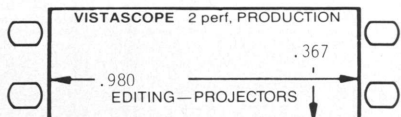
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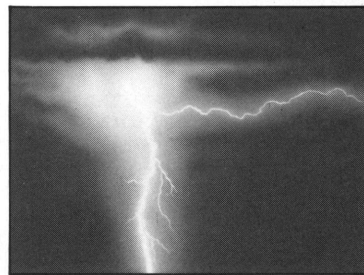


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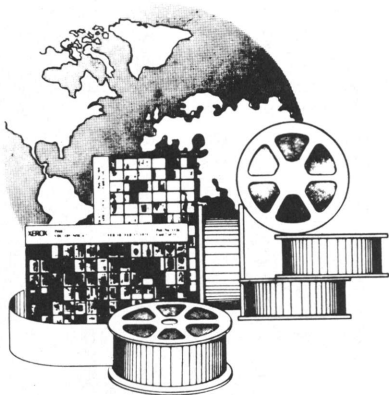
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In Memoriam



Frederick Gately, ASC, a veteran cinematographer who was a pioneer in the making of motion pictures for television, died January 8 after a long illness. He is survived by his wife, Rivia, and a daughter, Laurel Gately Burton. He had been an ASC member for 36 years.

Born in DeKalb, Illinois, on October 5, 1909, Gately got a youthful start in the industrial and commercial field. He was a film editor for Wilding Pictures, a leading non-theatrical producer headquartered in Detroit with studios in Chicago and Culver City, and later became head of the motion picture division of Sarra, Inc. By 1931 he was photographing commercial and documentary films for a number of established producers, working with a wide variety of equipment in 35mm black and white and 165mm and 35mm color.

In 1947 he photographed the Ewing Scott expeditionary drama, *Harpoon*, and several of Warner Bros. *So You Want To* ...comedies directed by Richard Bare.

Shortly he began photographing television films which were being produced in 35mm black and white, mostly at Hal Roach Studio, Samuel Goldwyn Studio and Republic Studios (soon renamed Revue Studios), for such early TV production companies as Allegro Pictures, New World Productions and Gross-Krasne Productions. His TV work in the early 1950s included such series as "Ozzie and Harriett" for Volcano, "Art Linkletter and the Kids," for Guedel, "Cavalcade of America," for Denove, and several special dramas for Gross-Krasne.

Gately made the pilot film and the first 13 episodes of "Dragnet" for Jack Webb's Mark VII Productions at Revue in 1953. The show won numerous awards. Edward Colman, ASC, later became cinematographer on "Dragnet" and Gately moved to the new "Big Town" show, for which he photographed 40 episodes. He made 13 "This Is Your Music" programs for Pacific Telephone.

In 1958 Gately photographed two features for Universal, *The Bandit* (in SuperScope) and the artistic Western, *The Naked Dawn*. His television series work continued with "Texas Rangers," "Cavalcade Theatre," "Father Knows Best," "My Sister Eileen," "Manhunt," "Room For One More," "The Hathaways," "Hazel" (two seasons), and "The Farmer's Daughter." When time permitted he worked on theatrical features, including *Badlands of Montana* for Twentieth Century-Fox, *I Bury the Living* for United Artists and *Tank Battalion* for American-International.

"Trapper John" was Gately's last television series. △

By invitation. . .

The American Society of Cinematographers

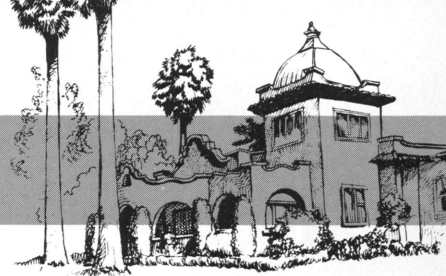
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From the Clubhouse



The film industry's oldest professional organization, the American Society of Cinematographers, has elected Harry Wolf to a second term as president. The entire slate of 1987 officers was re-elected for the 1988 term.

The officers are: Leonard South, vice president; Victor Kemper, vice president; Charles Wheeler, vice president; Joseph Westheimer, treasurer; Alfred Keller, secretary, and Jack Cooperman, sergeant-at-arms. The 1988 board of directors lists Howard Anderson, Joseph Biroc, Stanley Cortez, Linwood Dunn, William A. Fraker, Milton Krasner, Philip Lathrop, Michael Margulies, Richard L. Rawlings, Lester Shorr and Ted Voigtlander. Alternate board members are Victor Kemper, Sherwood "Woody" Omens, Charles Wheeler, Richard Glouner and Alfred Keller.

The ASC, chartered in January 1919 as a cultural and educational society with an invitation-only membership of directors of photography of proven ability, has had 31 presidents in its 69 year history.

Roy H. Wagner, who began his professional career as a portrait photographer's assistant about 25 years ago and soon developed into a versatile and busy cinematographer, is the newest member of the ASC. Wagner's work recently attracted widespread attention in the pilot and first five episodes of CBS-TV's unusual "Beauty and the Beast" dramatic series.

Born in Cairo, Illinois, Wagner grew up in California. After his stint at the portrait studio, he began photographing TV commercials and screen ads. He joined the Air Force during the Vietnam conflict and became a production and documentary cinematographer. Returning to civilian life, he worked as a production assistant at MGM on *Voyage of the Damned* and *Executive Suite*. His first feature as a director of photography was *Hype*, in 1979. *Enter the Ninja*, *Night Force*, *Nine Deaths of the Ninja* and *Pray For Death* followed. He was second unit director of photography of *No Man's Land* and *Burglar*. With a friend he then

started a videotape production company which made many commercials, educational shorts and cable TV programs.

The turning point of his career came when he was called in on the third day of production to take over photography of *Witchboard*, which was already two days behind and over budget. *Return to Horror High* and *Nightmare on Elm Street (Dream Warriors)* followed. Wagner recently completed the pilot of the Columbia/ABC tele-series, "Juarez," which is said to have the look of Georgia O'Keeffe's paintings of the Southwest.

A serious student of the visual arts, Wagner believes that the cinematographer, as a story teller, can "create worlds never before imagined or recall almost forgotten moments." Well said, Roy Wagner, ASC.

. . .

Members and guests who crowded the Bel Air Country Club to capacity on the night of January 8 seemed unanimous in their opinion: this was the best Gala Annual Affair yet. Stanley Cortez, ASC, who has masterminded the grand party for years, was determined that the latest edition would be 100% fun, with no hint of solemnity. This was evident in the design on the programme - a clown juggling the masks that symbolize comedy and drama.

A salute to the Academy of Motion Picture Arts and Sciences honored its 60th anniversary. Robert Wise, AMPAS president, responded with a touching reply in which he named all the directors of photography he had worked with since 1943.

Another guest was Hal Kanter, who wrote fine comedy scripts for the likes of Hope, Crosby and Kaye before he became a top producer-director; his gag-filled talk was a delight. Patty Andrews presented songs made famous by the Andrews Sisters with the same vivacity she displayed when sparring with Abbott and Costello. The orchestra was under the able baton of Manny Harmon, and Wally Weschler provided elegant piano interludes.

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The Chariot Race Is On Again!



The Ben-Hur crew in Rome. The only cinematographer who didn't wear a cap was Karl Struss.

Ben-Hur was the most expensive movie in history when MGM released it in 1925. The drama of Jerusalem in the period of Roman occupation cost about \$4 million, a figure not equalled until five years later when Howard Hughes produced *Hell's Angels*. It was a magnificent picture, directed by Fred Niblo and photographed by Rene Guissart, ASC, Karl Struss, ASC, Percy Hilburn, ASC, and Clyde DeVinna, ASC. (There were other directors and cinematographers involved at various stages of the trouble-plagued production, but that's a different story). Production costs threatened to sink the studio, but the finished product brought great prestige to the young company.

Although *Ben-Hur* has long been available for screenings from various film archives, the circulating prints were only a pale shadow of what audiences saw 63 years ago. The original release prints were tinted and toned throughout, with special sequences photographed in Technicolor. It was accompanied by a symphonic score by Dr. William Axt and David Mendoza (symphonic in the big city first runs, at least, but arranged for small orchestra, organ and piano for the smaller theaters). This music was recorded on an optical track when the picture was reissued in 1931.

Thanks to Turner Entertainment Co., which now owns the MGM library, this fine picture can now be seen in its original splendor. Kevin Brownlow and David Gill, England's gifts to film scholarship, and Richard May, of Turner Entertainment and formerly of MGM, supervised restoration and production of the new prints. They did a magnificent job, as did YCM Laboratories in Burbank, where Pete Commandini was in charge of putting everything on modern color safety stock, including the music track from the 1931 edition.

The restoration came about when *Ben-Hur* was selected by Thames Television in London as the MGM picture to be premiered by them at the London Film Festival on November 24, 1987, and to be shown subsequently on TV. It has since had its American premiere on January 13 as a part of the Los Angeles County Art Museum's "Hollywood and History: Costume Design in Film" exhibit, and a week later at the United States Film Festival at Sundance Institute in Park City, Utah.

An original print of the Technicolor footage was found in the Czechoslovakian Film Archive. It totals about 10 minutes, but it seems like more in the 128-minute feature because of its deploy-

ment in widely separated scenes. This was sent to YCM, which transferred the color to safety negative and color corrected it to match the original print. The original black and white negative was sent to the Technicolor laboratory in London, where, by use of color filters, the tinted material was printed onto color print film in the original colors. The source for the correct colors came from the original cutting continuity, a scene by scene description of the edited film tabulated to the exact number of frames.

This restoration is part of an ongoing relationship between TEC and Thames that has resulted in new, restored prints of some other silent classics, including *The Big Parade*, *Greed*, *The Wind and Flesh and the Devil*. Fine restorations such as these prove astonishing to persons who have seen them only in multi-generation prints projected, usually, at incorrect speeds. Some sound films are also being given new life by the same people, such as *The Private Lives of Elizabeth and Essex*, *Easter Parade* and *Raintree County*.

Ben-Hur was being filmed in Italy, but there were insuperable location problems including bad weather and cumbersome full-scale period ships used in the sea battle resulted in several deaths. Production was moved to MGM's Culver City lot. The celebrated chariot race was filmed on a huge outdoor set at what is now the intersection of Venice and La Cienega Boulevards. Ingenious hanging miniatures, which included a stadium full of moving mechanical patrons, completed the impressive reconstruction of an ancient Roman arena. Ramon Navarro as Judah Ben-Hur and Francis X. Bushman as Messala were the starring antagonists of the truly hair-raising race.

Incidentally, one scene that baffled audiences of the day showed Claire MacDowall and Kathleen Key being cleansed of leprosy by Christ as he struggled toward Calvary. Karl Struss, utilizing the then-new panchromatic film, did it with colored makeups and a graduated green-to-red filter. He used the same principle in 1931 in the transformation scenes of *Dr. Jekyll and Mr. Hyde*. △

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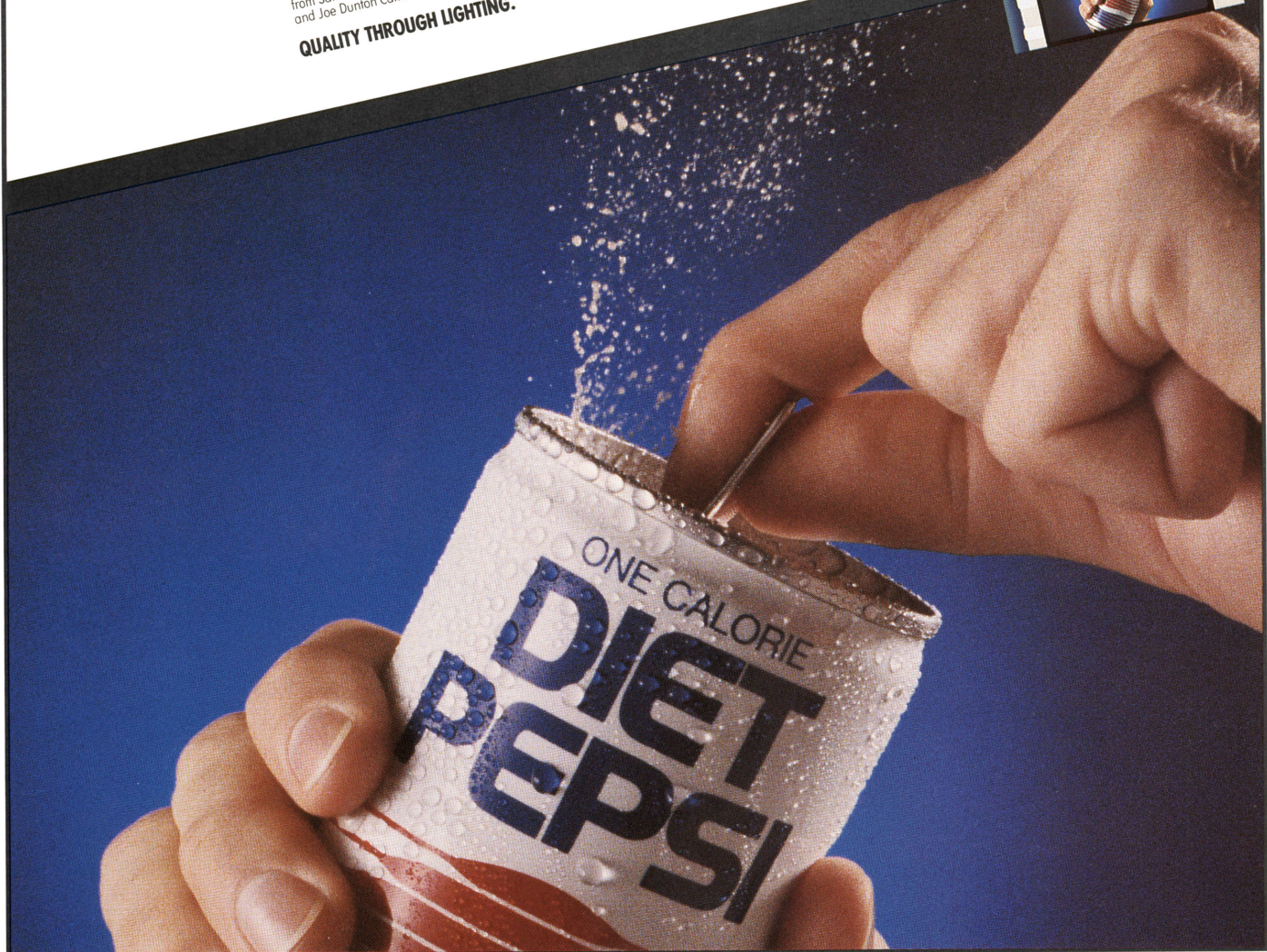
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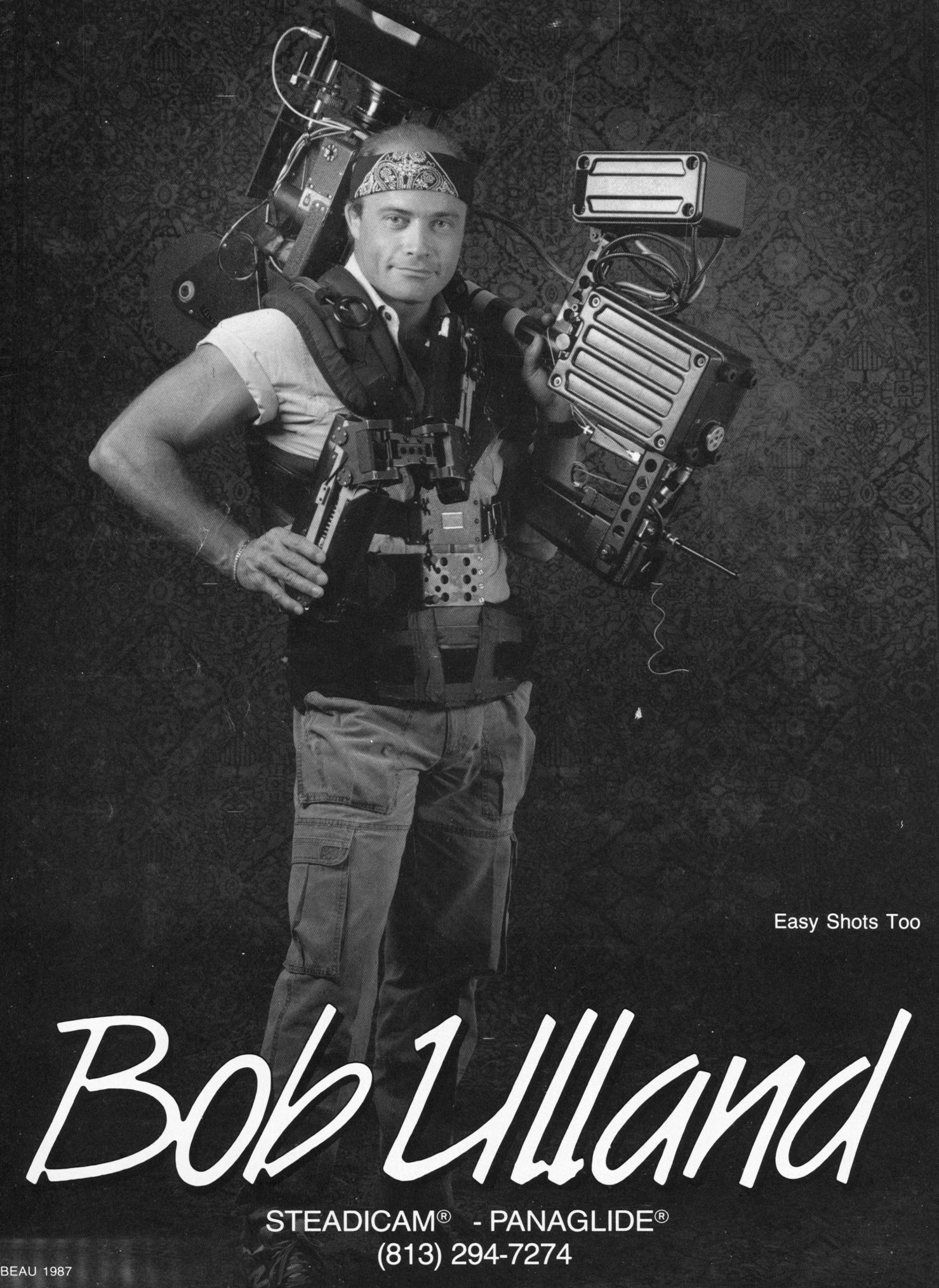
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